February 2014

EZR Series Pressure Reducing Regulator

☆ **Robust**

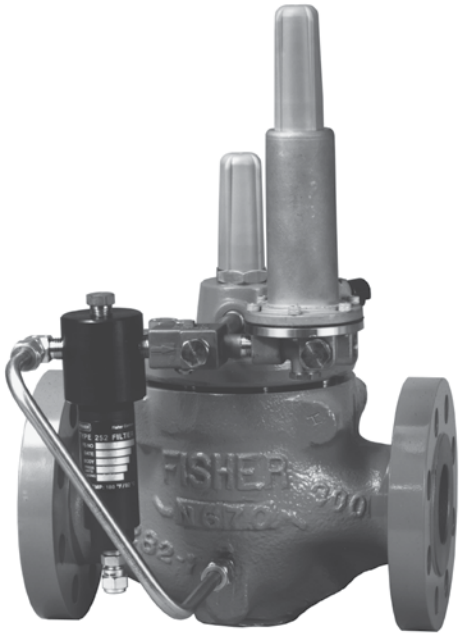
☆ **Quiet Operation**

☆ **Thoroughly Tested**

☆ **Exceptional Design**

W8136

TYPE EZROSX WITH INTEGRAL SLAM-SHUT DEVICE



W7399

TYPE EZR REGULATOR

☆ **Internally Actuated**

☆ **NPS 1, 1-1/4 x 1, 2 x 1, 2, 3, 4, 6 and 8 / DN 25, 32 x 25, 50 x 25, 50, 80, 100, 150, 200 and EW Body Sizes**

Figure 1. *EZR Series Pressure Reducing Regulator*

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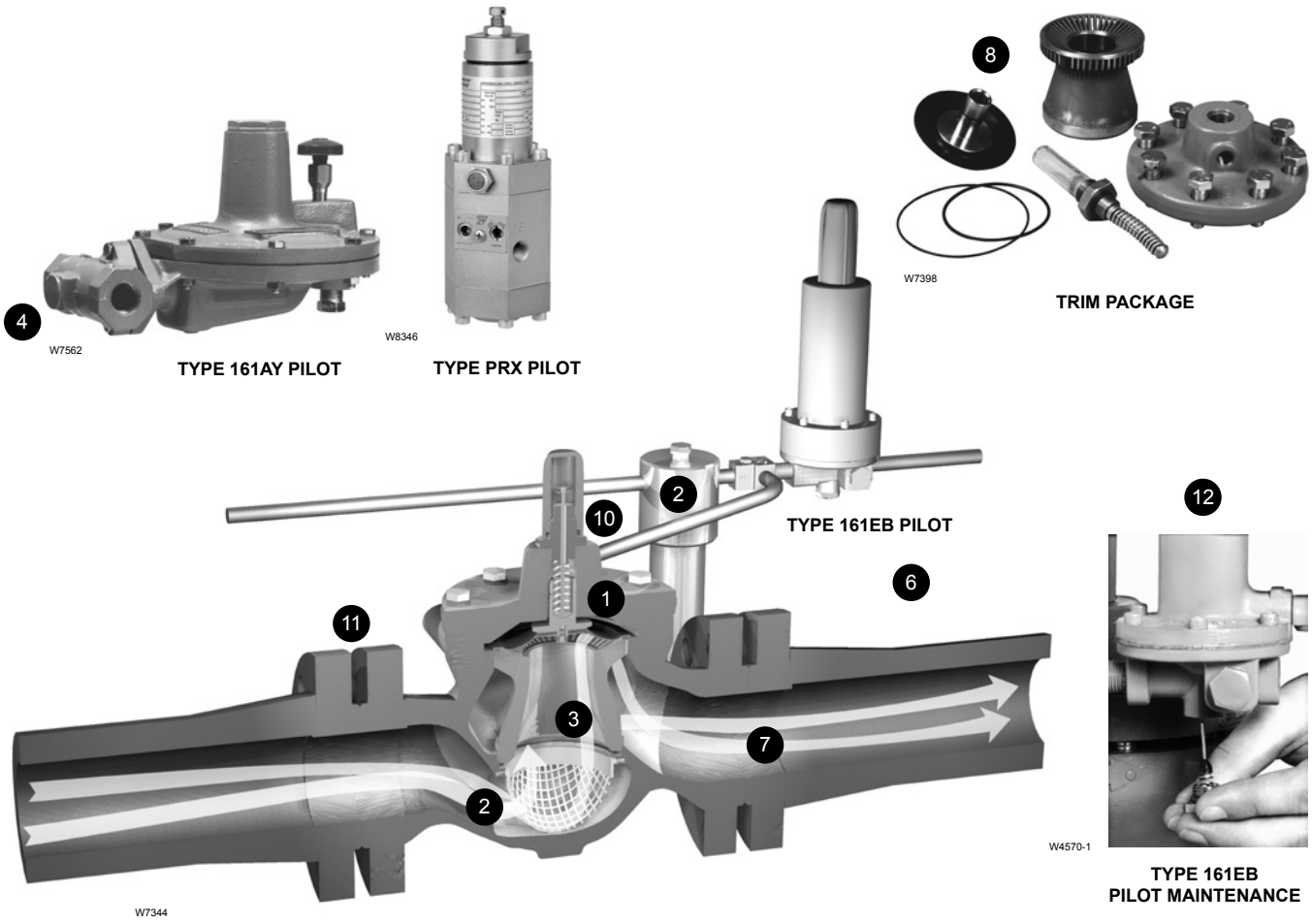


Figure 2. *EZR Series Features and Benefits*

Introduction

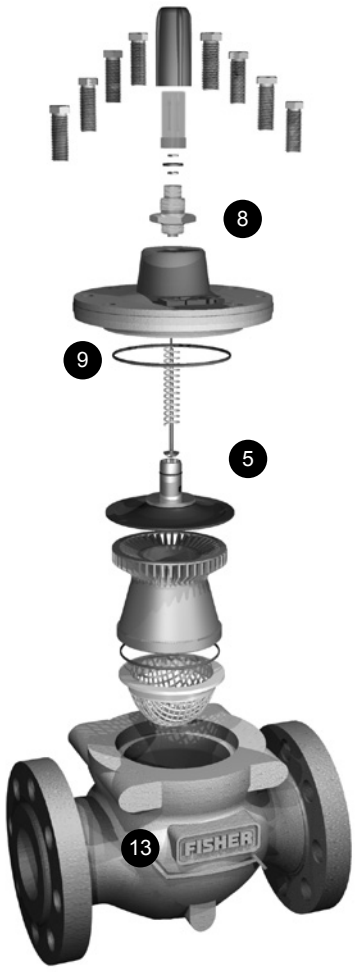
The Type EZR pilot-operated, pressure reducing regulator is designed for natural gas transmission/distribution systems and industrial/commercial applications. The Type EZR provides smooth, quiet operation, tight shutoff and long life, even in dirty service. Its internally actuated metal plug eliminates disadvantages associated with boot-style regulators, and the specially engineered flow path deflects debris, protecting the seat from damage and erosion. The Type EZR is used in conjunction with a 161EB or 161AY Series pilot and Type 112 restrictor or with a PRX Series pilot (with integral restrictor). The Type EZR pressure reducing regulator can be converted to a high pressure relief valve or backpressure regulator by simply changing to a relief piloting system (refer to Bulletin 71.4:EZR). An optional inlet strainer prevents large particles from entering the main valve, limiting damage to internal parts. A Type 252 pilot supply filter (optional) can be added to keep pipeline debris from entering the pilot. For underpressure and/or overpressure protection, the Type EZR is available with an integral slam-shut device.

The Type EZROSX slam-shut device can provide either overpressure or overpressure and underpressure protection by completely shutting off the flow of gas to the downstream system. The slam shut has a mechanism box and a manometric device. The manometric device is a spring and diaphragm or piston actuator. Its movement activates the detection stage of the mechanism box. The shutoff is a two stage process, the detection stage and the power stage. This separation between detection stage and power stage provides maximum precision, alleviating many false trips caused by environmental vibrations. The slam-shut device includes a bypass valve that will allow pressure to be equalized when resetting the device. Once the slam-shut device has been tripped, it must be manually reset.

Features and Benefits

1. **Tight Shutoff—**The EZR Series uses a diaphragm and metal plug, eliminating the disadvantages of boot-style regulators. When open, the metal plug deflects particles and debris away from the diaphragm. The result is enhanced resistance to particle erosion, which provides excellent shutoff over an extended life. When closed, loading pressure and the main spring push the diaphragm onto the tapered-edged seat on the cage.
2. **Debris Protection—**The specially engineered flow path, along with the metal plug, allows flow through the regulator without seat impingement. The addition of an optional inlet strainer prevents large particles from entering the regulator, eliminating damage to internal parts.

   An optional Type 252 pilot supply filter collects pipeline debris before it reaches the pilot, reducing the possibility of pilot clogging.
3. **Quiet Operation—**The specially engineered flow path allows flow through the center of the cage and down through the cage slots—reduces operational noise, making the EZR Series an exceptionally quiet regulator.
4. **High Accuracy—**Multiple outlet pressure ranges and narrow proportional bands offered by the 161EB Series, 161AY Series and Type PRX/120 pilots provide the EZR Series with tight, accurate control. For applications requiring tighter control, using a Type 161AYM, 161EBM or PRX/120 pilot will increase the accuracy of the regulator.
5. **Long Life—**The robust design of the EZR Series with its metal plug and specially engineered flow path allows flow through the regulator without seat impingement. The diaphragm design eliminates the possibility of taking a “set”, a common problem with boot-style regulators. To prevent damage, the diaphragm is fully supported in both the open and closed positions. These features enable the EZR Series components to work longer with less wear and tear.
6. **Full Usable Capacity—**Fisher® branded regulators are laboratory tested. 100 percent of the published flow capacity can be used with confidence.
7. **Thorough Laboratory Testing—**Emerson Process Management Regulator Technologies, Inc. state-of-the-art flow laboratory allows thorough testing of all new designs. Tests are conducted on Fisher branded regulators for performance features such as flow, strength, shutoff, material compatibility and noise.
8. **Easy In-Line Maintenance—**Top-entry design reduces maintenance time. Trim parts can be inspected, cleaned and replaced without removing the body from the pipeline. No special alignment is required when replacing the diaphragm. The EZR Series incorporates E-body construction, making it easy to change existing E-body regulators and control valves with an EZR Series trim kit.
9. **O-ring Design—**The EZR Series uses elastomer O-rings instead of gaskets, reducing maintenance and assembly time.



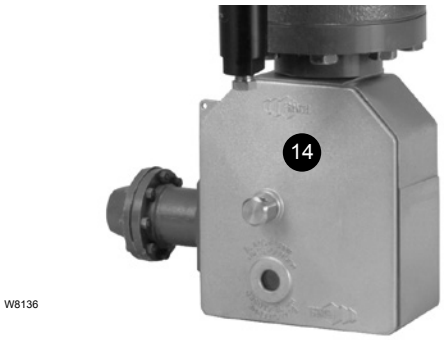


Figure 2. *EZR Series Features and Benefits (continued)*

10 **In-Service Travel Indicator—**The optional travel indicator responds to the precise movement of the diaphragm and plug assembly and shows the actual valve position. The travel indicator makes in-service inspection and troubleshooting easy. Also, it can be used for remote alarming and monitoring stem position.

11 **Versatility—**The EZR Series uses the E-body, making available the standard construction materials and end connections (ASME and EN) used by other E-body regulators and control valves. The 161AY Series pilots can handle inlet pressures up to 150 psig / 10.3 bar and outlet pressure from 6 inches w.c. to 7 psig / 15 mbar to 0.48 bar. The 161EB Series pilots can handle inlet pressures up to 1500 psig / 103 bar and outlet pressures from 5 to 700 psig / 0.35 to 48.3 bar. The Type PRX pilots can handle inlet pressures up to 1480 psig / 102 bar and outlet pressures up to 1000 psig / 69.0 bar.

By changing to a relief piloting system (6358 Series pilots), a Type EZR pressure reducing regulator easily becomes a very effective high volume relief valve or backpressure regulator (refer to Bulletin 71.4:EZR).

12 **Easily Maintained Pilots—**The pilots are designed to allow quick and simple in-line trim inspection and parts replacement.

13 **Powder Paint Coating—**Fisher® regulators are powder paint coated providing superior impact, abrasion and corrosion resistance.

14 **Slam-shut device—** Type EZROSX with slam-shut device provides either overpressure (OPSO) or overpressure and underpressure (OPSO/UPSO) protection by completely shutting off the flow at the downstream system.

Pilot Type Descriptions

Type 161AY—Low-pressure pilot with an outlet pressure range from 6 inches w.c. to 7 psig / 15 mbar to 0.48 bar. Pilot bleeds (exhausts) downstream through the sense (control) line.

Type 161AYM—The monitor version of the Type 161AY pilot. The pilot bleed (exhaust) is isolated from the sense (control) line. This pilot is used in monitoring systems requiring an isolated pilot bleed (exhaust).

Type 161EB—High accuracy pilot with an outlet pressure range from 5 to 350 psig / 0.34 to 24.1 bar. Pilot bleeds (exhausts) downstream through the sense (control) line.

Type 161EBM—The monitor version of the Type 161EB pilot. The pilot bleed (exhaust) is isolated from the sense (control) line. This pilot is used in monitoring systems requiring an isolated pilot bleed (exhaust).

Type PRX/120—Outlet pressure range of 14.5 to 435 psig / 1 to 30.0 bar. The Type PRX/120 can be used as the pilot on single stage pressure reducing regulators, as the monitor pilot or as the working pilot in wide-open monitor systems, or as the working pilot for monitoring and working regulators in the working monitoring systems. The Type PRX has a double diaphragm which provides increased accuracy and sensitivity, an integral restrictor adjustment to allow adjustable opening and closing speeds and a damper adjustment to allow adjustments to make for inlet pressure variability and loading pressure oscillations.

Type PRX/120-AP—Outlet pressure range of 435 to 1000 psig / 30.0 to 69.0 bar. The Type PRX/120-AP can be used as the pilot on single stage pressure reducing regulators, as the monitor pilot or as the working pilot in wide-open monitor systems, or as the working pilot for monitoring and working regulators in the working monitoring systems.

Type PRX/125 (Monitor Pilot Only)—Identical to the Type PRX/120 except the restriction screw is removed. The Type PRX/125 can only be used as the monitor override pilot on working monitor applications. Always order with Type PRX-120 in working monitor applications.

Type PRX/125-AP (Monitor Pilot Only)—Identical to the Type PRX/120-AP except the restriction screw is removed. The Type PRX/125-AP can only be used as the monitor override pilot on working monitor applications. Always order with Type PRX/120-AP in working monitor applications.

Pilot Selection Considerations

When selecting pilots to use with the EZR Series:

Use the 161 Series pilots for applications where normal flow is typically 5% and greater of maximum rated flow. The accuracy and control of the 161 Series pilots can be increased using the series' monitor pilots (M).

When the potential for low flow (< 5% of maximum rated flow) for extended periods exists due to the regulator being oversized or operational constraints the Type PRX pilot is recommended.

Additional details on how to set up the pilots for various flow rates is provided in the Type EZR Instruction Manual. If you have questions on which pilot to use for your application contact your local Sales Office.

Optional Pilot Supply Filter

The Type 252 pilot supply filter prevents pipeline debris from entering the pilot, a primary cause of pilot clogging. The aluminum body is rated for 2150 psig / 148 bar and the stainless steel body for 2750 psig / 190 bar. Both are available in standard or extended length with a pipe plug or a drain valve. When the upstream system is free of debris, the EZR Series may be installed without a filter.

Principle of Operation

As long as the outlet (control) pressure is above the outlet pressure setting, the pilot valve plug or disk remains closed (Figure 3). Force from the main spring, in addition to inlet pressure bleeding through the restrictor (integral in the PRX Series pilots), provide downward loading pressure to keep the main valve diaphragm and plug assembly tightly shutoff.

When the outlet pressure decreases below the pilot outlet pressure setting, the pilot plug or disk assembly opens. Loading pressure bleeds downstream through the pilot faster than it can be replaced through the supply line. This reduces loading pressure on top of the main valve diaphragm and plug assembly and lets the unbalanced force between inlet and loading pressure overcome the main spring force to open the Type EZR diaphragm and plug assembly.

Specifications

Available Configurations

Type EZR: Pilot-operated pressure reducing regulator for low to high outlet pressure

Type EZROSX: Type EZR with a Type OS2 slam-shut device for overpressure (OPSO) or overpressure and underpressure (OPSO/UPSO) protection

Main Valve Body Sizes, End Connection Styles and Structural Design Ratings(1)(2)

See Table 1

Maximum Inlet Pressures and Pressure Drops(1)

Main Valve: See Table 8

Pilots: See Table 3

Restrictor: 1500 psig / 103 bar

Outlet (Control) Pressure Ranges

See Table 2

Main Valve Plug Travel

NPS 1, 1-1/4 x 1, 2 x 1 / DN 25, 32 x 25, 50 x 25: 0.37-inch / 9.4 mm

NPS 2 / DN 50: 0.68-inch / 17 mm

NPS 3 / DN 80: 0.98-inch / 25 mm

NPS 4 / DN 100: 1.19-inch / 30 mm

NPS 6 / DN 150: 1.5-inch / 38 mm

NPS 8 / DN 200: 1.75-inch / 44 mm

Minimum and Maximum Differential Pressures(1)

See Tables 4 and 8

Main Valve Flow Direction

Up through the center of the cage and down through the cage slots

Proportional Bands

See Table 2

Regulating Capacities

See Tables 13, 14 and 15

Flow Coefficients

Main Valve: See Tables 9 and 10

Pilots: See Table 11

Restrictor: See Table 12

IEC Sizing Coefficient

See Table 5

Pressure Registration

External

Temperature Capabilities(1)

See Table 7

Approximate Weights

See Table 18

Options

- Pre-piped Pilot Supply and Pilot Bleed
- Travel Indicator
- Inlet Strainer
- Type 252 Pilot Supply Filter
- Trim Package
- Restricted Capacity Trim
- Pilot Diaphragm for Pressure Loading
- Quick Disconnect Union in Pilot Mounting

Construction Materials

EZR Series Main Valve

Body: Cast iron, WCC steel or LCC steel
Bonnet: LF2 Steel
Bonnet Bushing: 416 Stainless steel
Cage: 15-5 Stainless steel
Spring: Zinc-plated steel or 17-7 Stainless steel
Top Plug: 17-4 Stainless steel
Bottom Plug: 416 Stainless steel
Inlet Strainer: 316 Stainless steel
Strainer Replacement Shim: 18-8 Stainless steel
Diaphragm: Nitrile (NBR) or Fluorocarbon (FKM)
O-rings: Nitrile (NBR) or Fluorocarbon (FKM)
Flanged Locknut: Zinc-plated steel
Backup Rings: Polytetrafluoroethylene (PTFE)
Upper Spring Seat: 416 Stainless steel
Indicator Protector and Cover: Plastic
Indicator Stem: 303 Stainless steel
Indicator Fitting: 416 Stainless steel
Travel Indicator Plug: 416 Stainless steel

Restricted Trim

E-Ring: Carbon steel
Restrictor Plate: 416 Stainless steel

161EB Series Pilots

Body: CF8M Stainless steel
Spring Case: CF8M Stainless steel
Body Plug: 303 Stainless steel
Control Spring: Zinc-plated steel
Valve Plug: Nitrile (NBR) or Fluorocarbon (FKM)
Adjusting Screw: Zinc-plated steel
Diaphragm: Nitrile (NBR) or Fluorocarbon (FKM)
Diaphragm Limiter: 303 Stainless steel
O-rings: Nitrile (NBR)

161AY Series Pilots

Body: Cast iron
Spring Case and Lower Casing: Ductile iron
Stem Guide: 303 Stainless steel
Control Spring: Zinc-plated steel
Lever Assembly: 302 Stainless steel
Pusher Post: 303 Stainless steel
Diaphragm: Nitrile (NBR) or Fluorocarbon (FKM)
O-rings: Nitrile (NBR) or Fluorocarbon (FKM)
Orifice: 303 Stainless steel
Disk Assembly: Nitrile (NBR) or Fluorocarbon (FKM)

1. The pressure/temperature limits in this Bulletin and any applicable standard or code limitation should not be exceeded.
2. Ratings and end connections other than ASME standards can usually be provided; contact your local Sales Office.

- continued -

Specifications (continued)

PRX Series Pilots
Body: Steel, ASTM 105
Trim: Stainless steel
Elastomers: Nitrile (NBR) or Fluorocarbon (FKM)
Disk Material: Polyurethane (PU) or Fluorocarbon (FKM)

Mounting Parts
Pilot Mounting Pipe Nipple: Plated steel
Tubing and Fittings: Stainless steel

Type 112 Restrictor
Body: CF8M Stainless steel
Groove Valve: 416 Stainless steel
Retainer: 416 Stainless steel
Pipe Plug: 316 Stainless steel
O-rings: Fluorocarbon (FKM)

Type 252 Pilot Supply Filter
Body: Aluminum or Stainless steel
Filter Cartridge: Polyethylene
O-rings: Nitrile (NBR)
Drain Valve or Pipe Plug: 316 Stainless steel

Slam-Shut Device
Mechanism Box: Aluminum alloy
First and Second Stage Mechanism: Steel
Diaphragm: Nitrile (NBR)
Bellows: 316 Stainless steel

Table 1. *Main Valve Body Sizes, End Connection Styles and Body Ratings*

TYPE	MAIN VALVE BODY SIZES		MAIN VALVE BODY MATERIAL	END CONNECTION STYLES(1)	STRUCTURAL DESIGN RATING(2)	
	NPS	DN			psig	bar
EZR	2 x 1, 2, 3, 4 and 6	50 x 25, 50, 80, 100 and 150	Cast iron	NPT 2 x 1 and 2 only	400	28.0
				CL125 FF	200	14.0
				CL250 RF	500	34.0
	1, 1-1/4 x 1(3), 2 x 1, 2, 3, 4, 6 x 4(4), 8 x 4(4), 6, 8 x 6(4) and 12 x 6(4)	25, 32 x 25(3), 50 x 25, 50, 80, 100, 150 x 100(4), 200 x 100(4), 150, 200 x 150(4) and 300 x 150(4)	WCC Steel	NPT or SWE NPS 1, 2 x 1 and 2 only / DN 25, 50 x 25 and 50 only	1500	103
				CL150 RF	290	20.0
				CL300 RF	750	52.0
				CL600 RF or BWE	1500	103
	8	200	LCC Steel	CL150 RF	290	20.0
				CL300 RF	750	52.0
				CL600 RF	1500	103
EZROSX	1, 2 x 1, 2, 3, 4 and 6	25, 50 x 25, 50, 80, 100 and 150	WCC Steel	CL150 RF	290	20.0
				CL300 RF	750	52.0
				CL600 RF	1500	103

1. Ratings and end connections for other than ASME standard can usually be provided. Contact your local Sales Office for assistance.
2. See Tables 3, 6, 7 and 8 for diaphragm materials and additional pressure ratings.
3. Available in steel NPT only.
4. NPS 6 x 4, 8 x 4, 8 x 6, 12 x 6 / DN 150 x 100, 200 x 100, 200 x 150, 300 x 150 Types EZR and 399 bodies are not the same as the EW valve bodies and are not interchangeable.

Table 2. *Outlet (Control) Pressure Ranges and Typical Proportional Bands*

TYPE	OUTLET (CONTROL) PRESSURE RANGE		PROPORTIONAL BAND(1)(3)		PILOT CONTROL SPRING INFORMATION					
	psig	bar	psig	bar	Part Number	Color Code	Wire Diameter		Free Length	
							Inch	cm	Inch	cm
161AY or 161AYM	6 to 15 inches w.c.	15 to 37 mbar	1-inch w.c.	3 mbar(2)	1B653927022	Olive drab	0.105	0.27	3.75	9.53
	0.5 to 1.2	0.03 to 0.08	1-inch w.c.	3 mbar(2)	1B537027052	Yellow	0.114	0.29	4.31	10.95
	1.2 to 2.5	0.08 to 0.17	0.5	0.03(2)	1B537127022	Light green	0.156	0.40	4.13	10.49
	2.5 to 4.5	0.17 to 0.31	0.5	0.03(2)	1B537227022	Light blue	0.187	0.48	3.94	10.0
	4.5 to 7	0.31 to 0.48	0.5	0.03(2)	1B537327052	Black	0.218	0.55	4.13	10.49
161EB or 161EBM	5 to 15	0.35 to 1.0	0.5	0.03(2)	17B1260X012	White	0.120	0.31	3.75	9.53
	10 to 40	0.69 to 2.8	0.5	0.03(2)	17B1262X012	Yellow	0.148	0.38	3.75	9.53
	30 to 75	2.1 to 5.2	0.6	0.04(2)	17B1259X012	Black	0.187	0.48	4.00	10.16
	70 to 140	4.8 to 10	1.3	0.09(2)	17B1261X012	Green	0.225	0.57	3.70	9.40
	130 to 200	9 to 14	1.5	0.10(2)	17B1263X012	Blue	0.262	0.67	3.85	9.78
	200 to 350	14 to 24	3	0.21(2)	17B1264X012	Red	0.294	0.75	4.22	10.72
161EB(4)	30 to 300	2.1 to 20.7	6	0.41	15A9258X012	Green	0.243	0.62	1.88	4.78
TYPE	OUTLET (CONTROL) PRESSURE RANGE		ACCURACY CLASS (AC)(1)		PILOT CONTROL SPRING INFORMATION					
	psig	bar			Part Number	Color Code	Wire Diameter		Free Length	
							Inch	cm	Inch	cm
PRX/120 PRX/125	14.5 to 26	1 to 1.8	2.5%		M0255240X12	Yellow	0.110	0.28	2.16	5.49
	23 to 44	1.6 to 3.0	2.5%		M0255230X12	Green	0.126	0.32		
	41 to 80	2.8 to 5.5	2.5%		M0255180X12	Blue	0.138	0.35		
	73 to 123	5.0 to 8.5	2.5%		M0255220X12	Black	0.157	0.40		
	116 to 210	8 to 15	1%		M0255210X12	Silver	0.177	0.45	2.16	5.49
	203 to 334	14 to 23	1%		M0255200X12	Gold	0.197	0.50	2.00	5.10
	319 to 435	22 to 30	1%		M0265860X12	Aluminum	0.236	0.60	2.00	5.10
PRX/120-AP PRX/125-AP	435 to 1000	30 to 69	1%		M0273790X12	Clear	0.335	0.85	3.93	10.0

1. Proportional band and Accuracy Class include outlet pressure drop plus hysteresis (friction), but do not include lockup.
2. Proportional band was determined with a pressure drop ranging from 50 to 150 psig / 3.5 to 10 bar. Approximately double the proportional band if the pressure drop is less than 50 psig / 3.5 bar.
3. With Type 112 restrictor set on 2. With Type PRX restrictor turn the restrictor screw one turn counterclockwise from fully seated.
4. Should only be used as the intermediate reduction pilot on the Type EZR worker/monitor systems.

Table 3. *Pilot Pressure Ratings*

TYPE	MAXIMUM INLET PRESSURE		MAXIMUM EMERGENCY OUTLET PRESSURE OR MAXIMUM EMERGENCY SENSE PRESSURE(1)		MAXIMUM OUTLET PRESSURE		MAXIMUM BLEED (EXHAUST) PRESSURE FOR MONITOR PILOTS		MAXIMUM SENSE (CONTROL) PRESSURE FOR MONITOR PILOTS	
	psig	bar	psig	bar	psig	bar	psig	bar	psig	bar
161AY	150	10	150	10	150	10	----		----	
161EB	1500	103	1200	83	750	52				
161AYM	150	10	150	10	----		150	10	150	10
161EBM	1500	103	1200	83			1500	103	750	52
PRX Series	1480	102	1480	102	1480	102	1480	102	1480	102

1. Maximum pressure to prevent the casings from bursting during abnormal operation (leaking to atmosphere and internal parts damage might occur).

Table 4. *Main Valve Minimum Differential Pressures(1)*

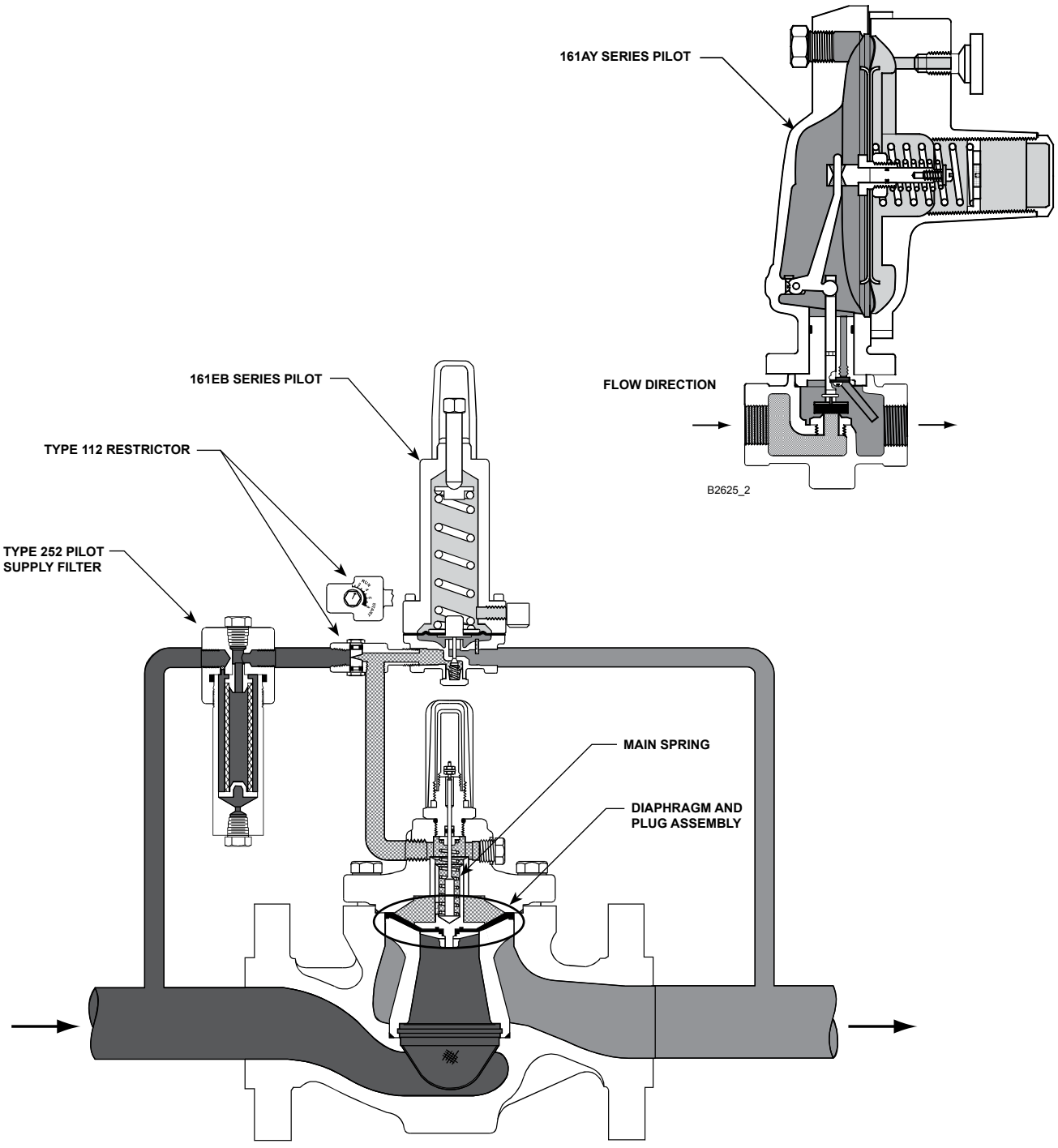
MAIN VALVE BODY SIZE		MAIN SPRING PART NUMBER AND COLOR	DIAPHRAGM MATERIAL	MINIMUM DIFFERENTIAL, PERCENT OF CAGE CAPACITY											
				For 90% Capacity						For 100% Capacity					
NPS	DN			100% Trim		60% Trim		30% Trim		100% Trim		60% Trim		30% Trim	
				psid	bar d	psid	bar d	psid	bar d	psid	bar d	psid	bar d	psid	bar d
1, 1-1/4 x 1	25, 32 x 25	19B2400X012, Light Blue	17E68 and 17E88	24	1.7	29	2.0	31	2.2	24	1.7	31	2.2	40	2.8
		GE12727X012, Black	17E97	35	2.5	38	2.7	42	2.9	35	2.5	39	2.7	52	3.6
			17E68 and 17E88	30	2.1	35	2.4	39	2.7	30	2.1	36	2.5	52	3.6
		19B2401X012, Black with White Stripe(3)	17E88 and 17E97	43	3.0	50	3.4	56	3.9	43	3.0	53	3.7	68	4.7
2 x 1	50 x 25	19B2400X012, Light Blue	17E68 and 17E88	24	1.7	29	2.0	31	2.2	24	1.7	31	2.2	40	2.8
		19B2401X012, Black with White Stripe	17E97	43	3.0	50	3.4	56	3.9	43	3.0	53	3.7	68	4.7
			17E68 and 17E88	43	3.0	50	3.4	56	3.9	43	3.0	53	3.7	68	4.7
		GE12501X012, Red Stripe(3)	17E97	68	4.7	73	5.0	88	6.1	72	5.0	81	5.6	102	7.0
2	50	19B0951X012, Yellow(2)	17E68 and 17E88	12	0.8	15	1.0	15	1.0	12	0.8	25	1.7	20	1.4
		18B2126X012, Green	17E97	24	1.7	25	1.7	26	1.8	24	1.7	30	2.1	37	2.6
			17E68 and 17E88	18	1.2	20	1.4	22	1.5	19	1.3	26	1.8	28	1.9
		18B5955X012, Red(3) GE05504X012, Purple(3)	17E88 and 17E97	29	2.0	29	2.0	31	2.1	31	2.1	35	2.4	43	3.03
3	80	T14184T0012, Yellow(2)	17E68 and 17E88	16	1.1	19	1.3	24	1.7	23	1.6	23	1.6	29	2.0
		19B0781X012, Light Blue	17E97	23	1.6	23	1.6	23	1.6	23	1.6	23	1.6	25	1.7
			17E68 and 17E88	21	1.5	22	1.5	28	1.9	28	1.9	28	1.9	33	2.3
		19B0782X012, Black(3)	17E88 and 17E97	32	2.2	33	2.3	43	3.0	38	2.6	38	2.6	50	3.4
4, 6 x 4 and 8 x 4	100, 150 x 100 and 200 x 100	T14184T0012, Yellow(2)	17E68, 17E88 and 17E97	10	0.7	12	0.8	14	1.0	25	1.7	25	1.7	25	1.7
		18B8501X012, Green	17E97	16	1.1	17	1.2	21	1.5	34	2.3	34	2.3	34	2.3
			17E68 and 17E88	16	1.1	17	1.2	20	1.4	30	2.1	30	2.1	30	2.1
		18B8502X012, Red(3)	17E88 and 17E97	21	1.5	24	1.7	26	1.8	40	2.8	40	2.8	40	2.8
6, 8 x 6 and 12 x 6	150, 200 x 150 and 300 x 150	19B0364X012, Yellow(2)	17E97	10	0.7	11	0.8	14	1.0	12	0.8	16	1.1	16	1.1
			17E88	10	0.7	13	0.9	13	0.9	12	0.8	21	1.5	21	1.5
		19B0366X012, Green	17E97	14	1.0	22	1.5	22	1.5	19	1.3	29	2.0	29	2.0
			17E88	17	1.2	21	1.5	21	1.5	20	1.4	36	2.5	36	2.5
		19B0365X012, Red(3)	17E88 and 17E97	23	1.6	29	2.0	29	2.0	30	2.1	41	2.8	41	2.8
8	200	GE09393X012, Yellow(2)	17E97	16	1.1	----		----		19	1.3	----		----	
		GE09396X012, Green		20	1.4					23	1.6				
		GE09397X012, Red(3)		26	1.8					30	2.1				

1. See Table 1 for structural design ratings, Table 3 for pilot ratings and Table 8 for maximum pressure ratings.
2. The white and yellow springs are only recommended for inlet pressures under 100 psig / 6.9 bar.
3. The red, black, purple, red stripe, and black with white stripe springs are only recommended for applications where the maximum inlet pressure can exceed 500 psig / 35 bar.

Table 5. *IEC Sizing Coefficients(1)*

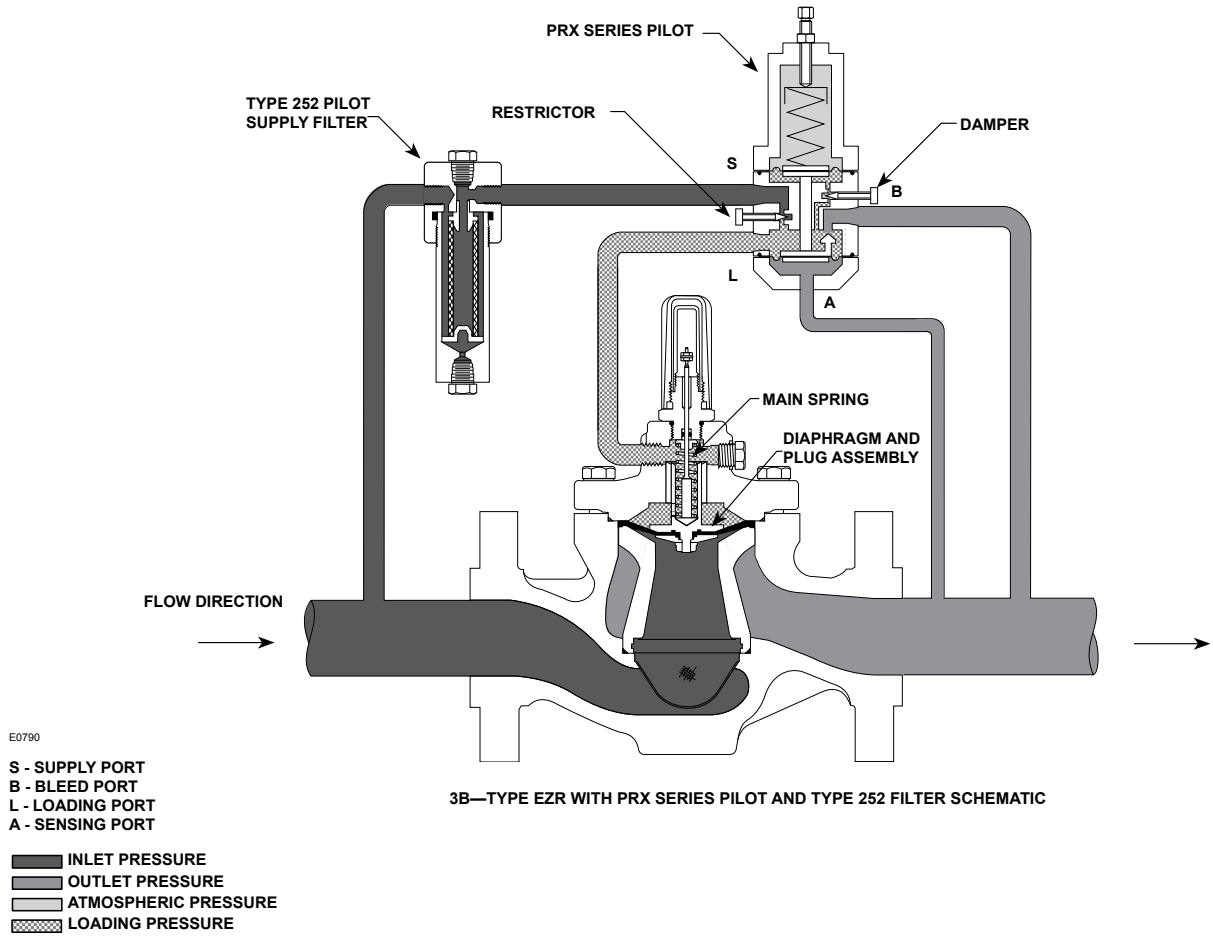
MAIN VALVE BODY SIZE, NPS / DN	X_T	F_D	F_L
1 / 25	0.71	0.06	0.94
2 / 50	0.88	0.09	0.96
3 / 80	0.95	0.09	0.97
4 / 100	0.95	0.09	0.92
6 / 150	0.81	0.13	0.91
8 / 200	0.96	0.10	0.89

1. At 100% capacity.



3A—TYPE EZR WITH TYPES 161EB PILOT, 112 RESTRICTOR AND 252 FILTER

Figure 3. *Type EZR Operational Schematic*



3B—TYPE EZR WITH PRX SERIES PILOT AND TYPE 252 FILTER SCHEMATIC

Figure 3. *Type EZR Operational Schematic (continued)*

As the outlet pressure rises toward the outlet pressure setting, it compresses the pilot diaphragm against the pilot control spring and lets the pilot valve plug or disk close. Loading pressure begins building on the Type EZR diaphragm and plug assembly. The loading pressure, along with force from the main spring, pushes the diaphragm and plug assembly onto the tapered-edge seat, producing tight shutoff.

Installation (Figures 7 and 8)

The robust design of the Type EZR regulator allows it to be installed indoors or outdoors. When installed outdoors, the Type EZR does not require a protective housing. It is designed to withstand the elements and the powder paint coating protects it against impacts, abrasions and corrosion.

When installed indoors, no remote venting is required except on the pilot spring case. This regulator can also be installed in a pit that is subject to flooding by venting the pilot spring case above the maximum possible flood level so the pilot setting can be referenced at atmospheric pressure.

Monitoring Systems

Monitoring regulation is overpressure protection by containment, therefore, there is no relief valve to vent to the atmosphere. When the working regulator fails to control the pressure, a monitor regulator installed in series, which has been sensing the downstream and control pressure, goes into operation to maintain the downstream pressure at a slightly higher than normal pressure. During an overpressure situation, monitoring keeps the customer on line. Also, testing is relatively easy and safe. To perform a periodic test on a monitoring regulator, increase the outlet set pressure of the working regulator and watch the outlet pressure to determine if the monitoring regulator takes over at the appropriate outlet pressure.

Wide-Open Monitoring Systems (Figures 5 and 8A)

There are two types of wide-open monitoring systems: upstream and downstream. The difference between upstream and downstream monitoring is that the functions of the regulators are reversed. Systems can be changed from upstream to downstream monitoring and vice-versa, by simply reversing the setpoints of the two regulators. The decision to use either an upstream or downstream monitoring system is largely a matter of personal preference or company policy.

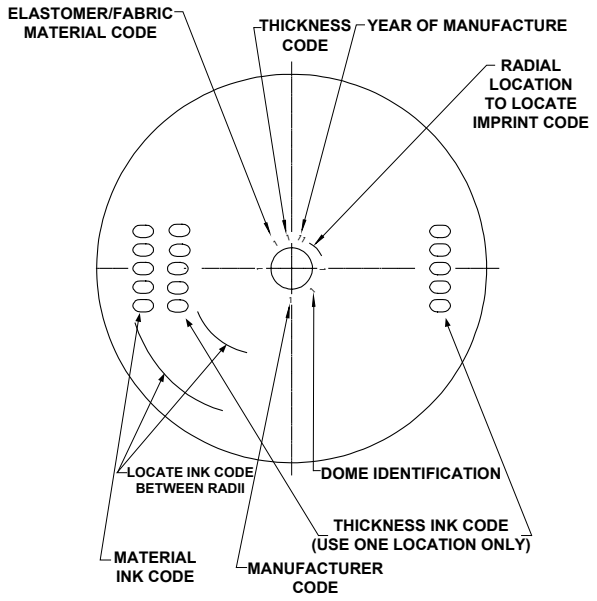


Figure 4. *Diaphragm Markings*

Table 6. *Diaphragm Imprint Codes*

THICKNESS		MATERIAL		DIAPHRAGM MATERIALS
Imprint	Ink Code	Imprint	Ink Code	
2	130	2	17E68	17E68 - Nitrile (NBR) (low temperature)
		4	17E88	17E88 - Fluorocarbon (FKM) (high aromatic hydrocarbon content resistance)
		5	17E97	17E97 - Nitrile (NBR) (high-pressure and/or erosion resistance)

In normal operation of a wide-open configuration, the working regulator controls the system's outlet pressure. With a higher outlet pressure setting, the monitor regulator senses a pressure lower than its setpoint and tries to increase outlet pressure by going wide-open. If the working regulator fails, the monitoring regulator assumes control and holds the outlet pressure at its outlet pressure setting.

In a wide-open monitoring system, use a Type EZR with a Type 161AYM, 161EBM, PRX/120 or PRX/120-AP pilot as the upstream regulator and a Type EZR with the appropriate 161AY, 161EB, PRX/120 or PRX/120-AP Series pilot as the downstream regulator. In this configuration, the lock-up pressure of the system is the lockup pressure of the working regulator, not the higher outlet pressure setting of the monitor regulator.

Working Monitoring Regulators (Figures 6 and 8B)

In a working monitoring system, the upstream regulator requires two pilots and it is always the monitoring regulator. The additional pilot permits the monitoring regulator to act as a series regulator to control an intermediate pressure during normal operation. In this way, both units are always operating and can be easily checked for proper operation.

In normal operation, the working regulator controls the outlet pressure of the system. The monitoring regulator's working pilot controls the intermediate pressure and the monitoring pilot senses the system's outlet pressure. If the working regulator fails, the monitoring pilot will sense the increase in outlet pressure and take control.

For PRX Series pilots (Figure 6), the working pilot is Type PRX-120 or PRX-120AP; the monitor pilot is Type PRX-125 or PRX-125AP.

Note

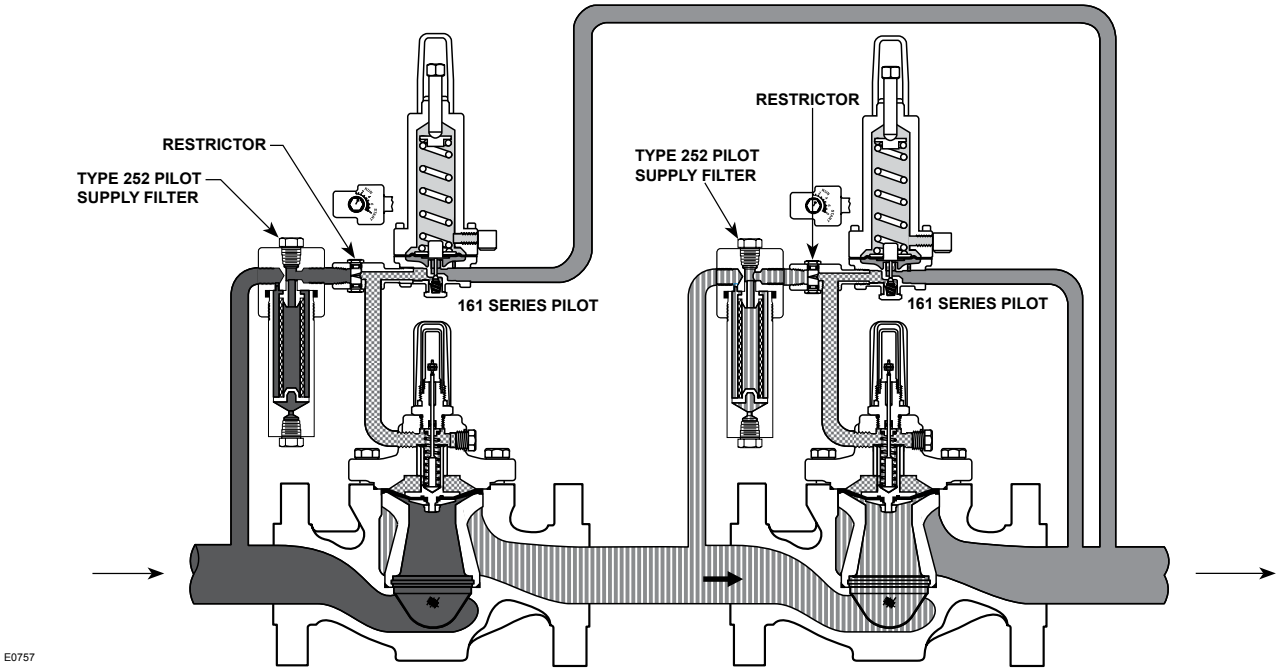
The working regulator must be rated for the maximum allowable operating pressure of the system because this will be its inlet pressure if the monitoring regulator fails. Also, the outlet pressure rating of the monitoring pilot and any other components that are exposed to the intermediate pressure must be rated for full inlet pressure.

Working monitor installations require a Type EZR main valve with a 161AY Series, 161EB Series, Type PRX/120 or PRX/120-AP working pilot and a Type 161AYM, 161EBM, PRX/125 or PRX/125-AP monitoring pilot for the upstream regulator and a Type EZR with the appropriate 161AY Series, 161EB Series, Type PRX/120 or PRX/120-AP pilot for the downstream regulator.

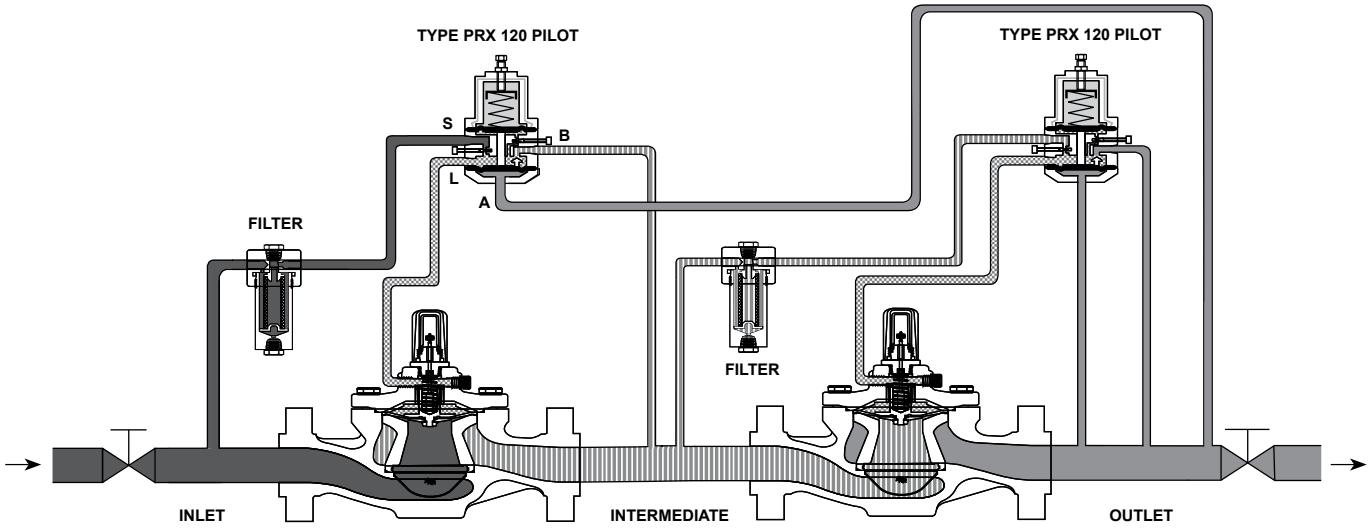
Overpressure Protection

Overpressuring any portion of a regulator or associated equipment may cause personal injury, leakage or property damage due to bursting of pressure-containing parts or explosion of accumulated gas. Provide appropriate pressure relieving or pressure limiting devices to ensure that the limits in the Specifications section are not exceeded. Regulator operation within ratings does not prevent the possibility of damage from external sources or from debris in the pipeline. Common methods of external overpressure protection include relief valves, monitoring regulators, shutoff devices and series regulation.

Type EZROSX regulator rely on the integrated slam-shut device for overpressure (OPSO) or overpressure and underpressure (OPSO/UPSO) protection. In the event that outlet pressure rises above or falls below the pressure setting, slam shut will completely shutoff the flow of gas to the downstream system.



TYPE EZR-161 UPSTREAM OR DOWNSTREAM WIDE-OPEN MONITOR



TYPE EZR-PRX UPSTREAM OR DOWNSTREAM WIDE-OPEN MONITOR

INLET PRESSURE
OUTLET PRESSURE
ATMOSPHERIC PRESSURE
LOADING PRESSURE
INTERMEDIATE PRESSURE

S - SUPPLY PORT
B - BLEED PORT
L - LOADING PORT
A - SENSING PORT

Figure 5. *Type EZR Upstream or Downstream Wide-Open Monitor*

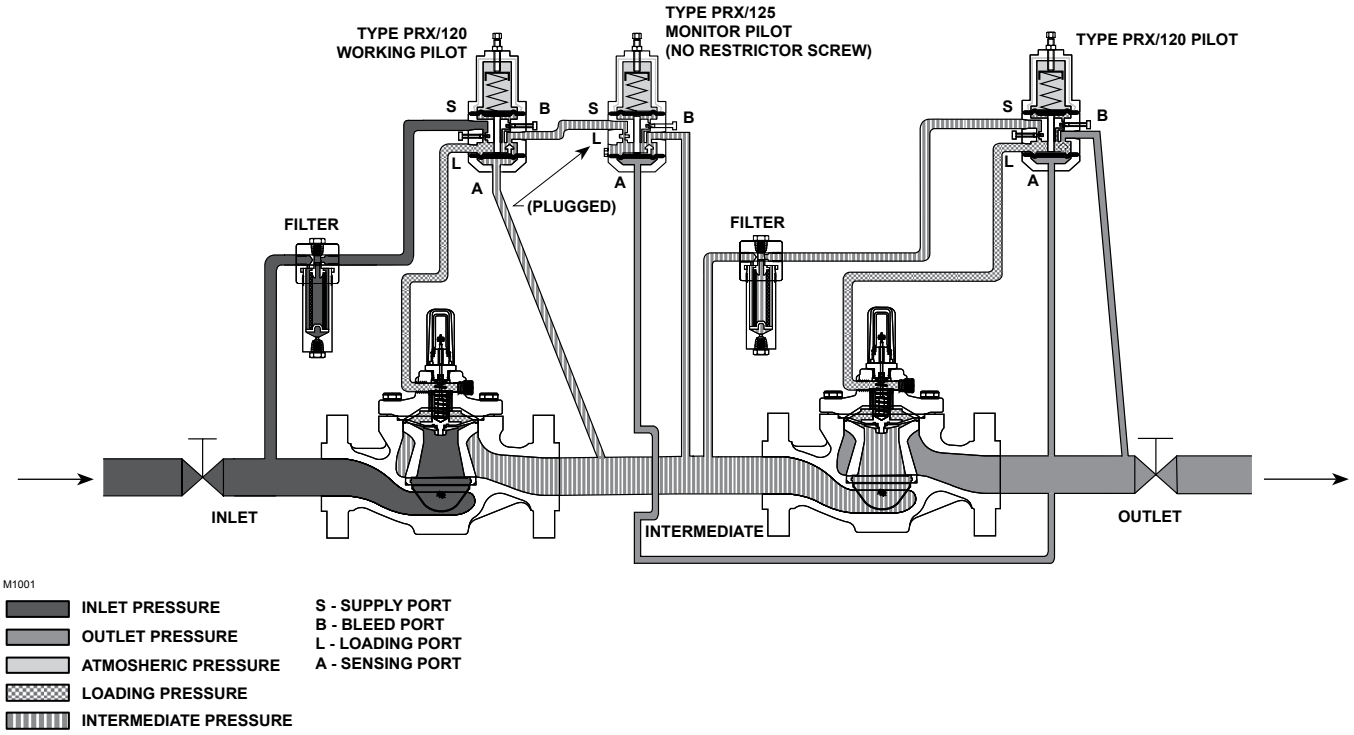


Figure 6. *Type EZR-PRX-PRX Working Monitor Schematic*

Capacity Information

Note

Flow capacities are laboratory verified; therefore, regulators may be sized for 100% flow published capacities. It is not necessary to reduce published capacities.

Tables 13,14 and 15 show the natural gas regulating capacities of the EZR Series regulator at selected inlet pressures and outlet pressure settings. Flows are in thousands of SCFH at 60°F and 14.7 psia (and in thousands of Nm³/h at 0°C and 1.01325 bar) of 0.6 specific gravity natural gas.

To determine equivalent capacities for air, propane, butane or nitrogen, multiply the capacity by the following appropriate conversion factor: 0.775 for air, 0.628 for propane, 0.548 for butane, or 0.789 for nitrogen. For gases of other specific gravities, multiply the given capacity by 0.775 and divide by the square root of the appropriate specific gravity.

To find approximate regulating capacities at pressure settings not given in Tables 13, 14 and 15 or to find wide-open flow capacities for relief sizing at any inlet pressure, perform one of the following procedures. Then, if necessary, convert using the factors provided above.

For critical pressure drops (absolute outlet pressure equal to or less than one-half of absolute inlet pressure), use the following formula:

$$Q = (P_1)(C_g)(1.29)$$

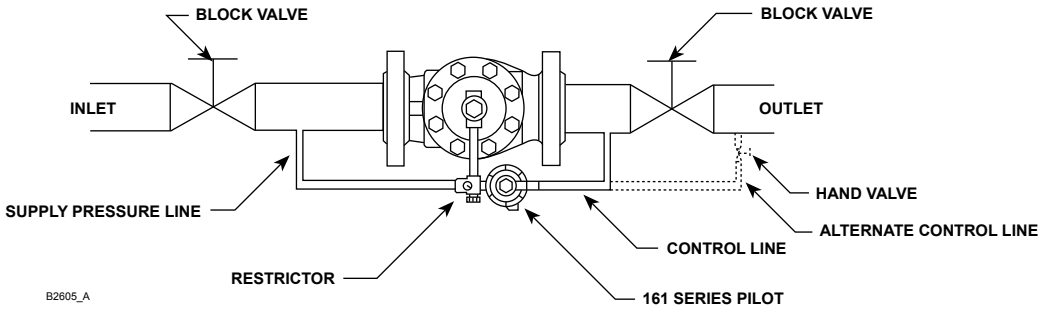
For pressure drops lower than critical (absolute outlet pressure greater than one-half of absolute inlet pressure).

$$Q = \sqrt{\frac{520}{GT}}\ C_g P_1 SIN\left(\frac{3417}{C_1}\sqrt{\frac{\triangle P}{P_1}}\right) DEG$$

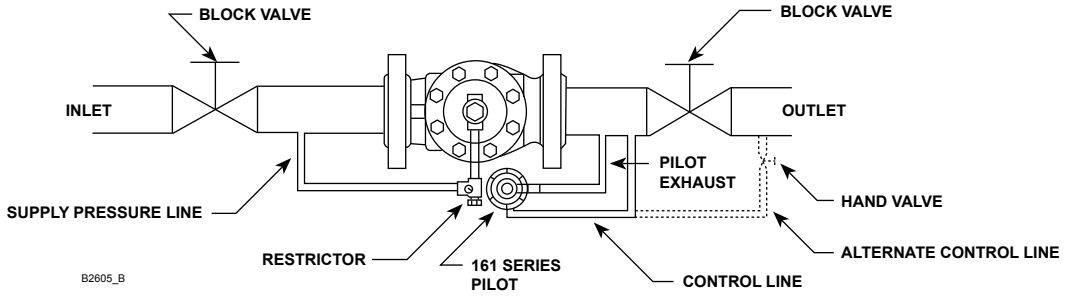
where,

- Q = gas flow rate, SCFH
- P_1 = absolute inlet pressure, psia (P_1 gauge + 14.7)
- C_g = regulating or wide-open gas sizing coefficient from Table 9 or 10
- G = gas specific gravity of the gas
- T = absolute temperature of gas at inlet, °Rankine
- C_1 = flow coefficient
- $\triangle P$ = pressure drop across the regulator, psi

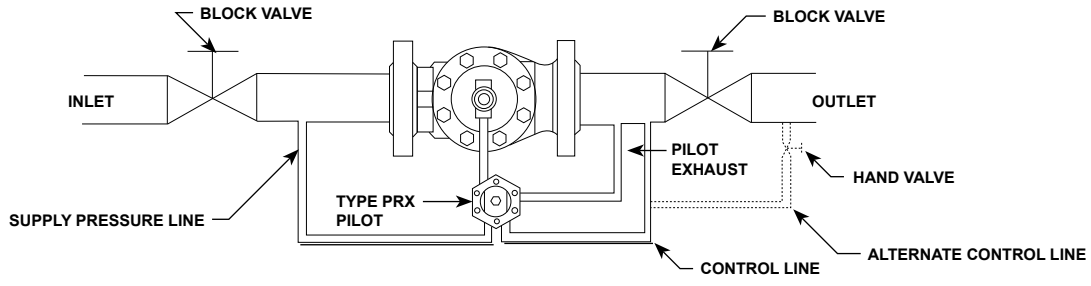
Then, if capacity is desired in normal cubic meters per hour at 0°C and 1.01325 bar, multiply SCFH by 0.0268.



7A—161 Series Single Pilot Installation with Pilot Exhaust into Control Line

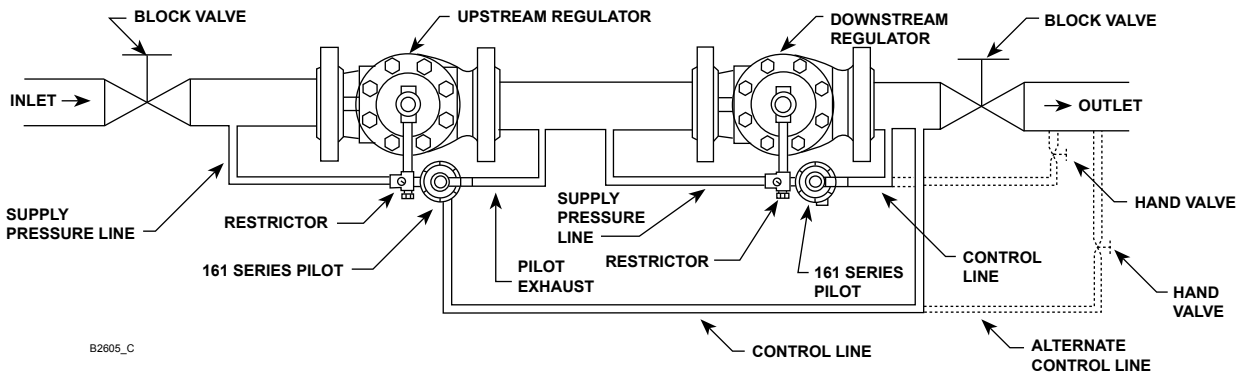


7B—161 Series Single Pilot Installation with Separate Pilot Exhaust Line

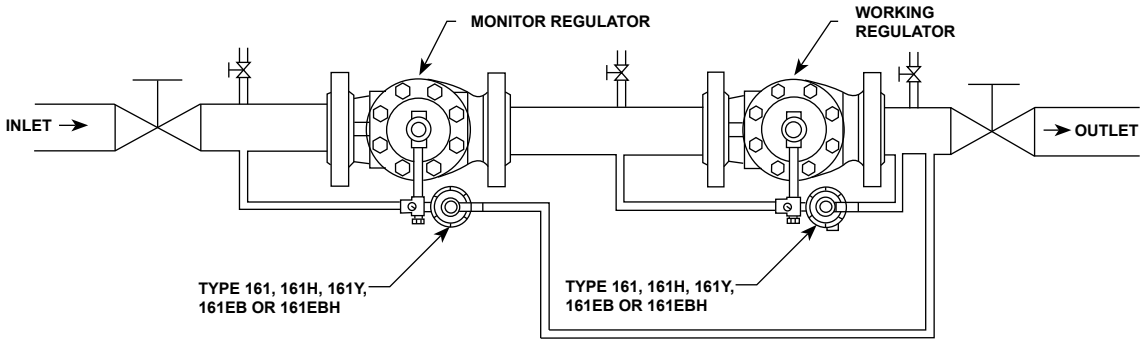


7C—Type PRX Single-Pilot Installation with Separate Pilot Exhaust Line

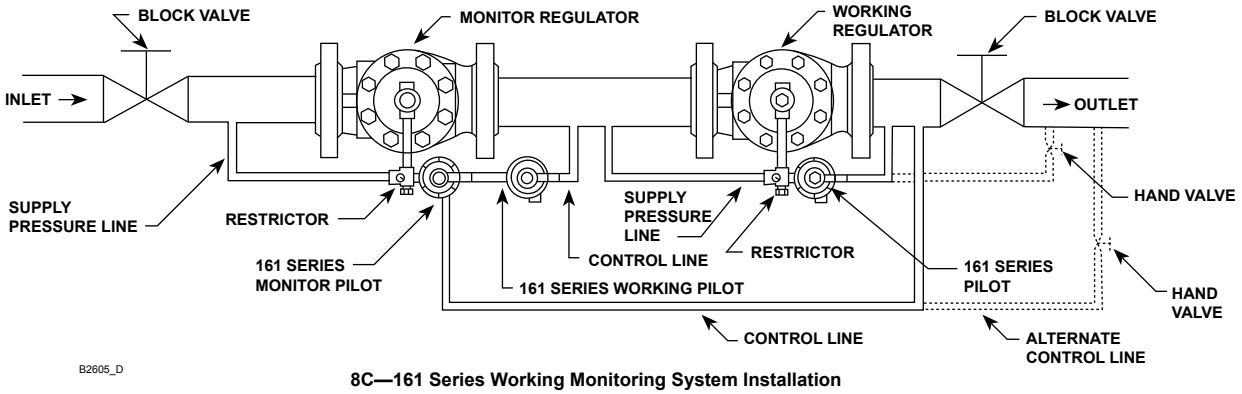
Figure 7. *Typical EZR Single Installation Schematics*



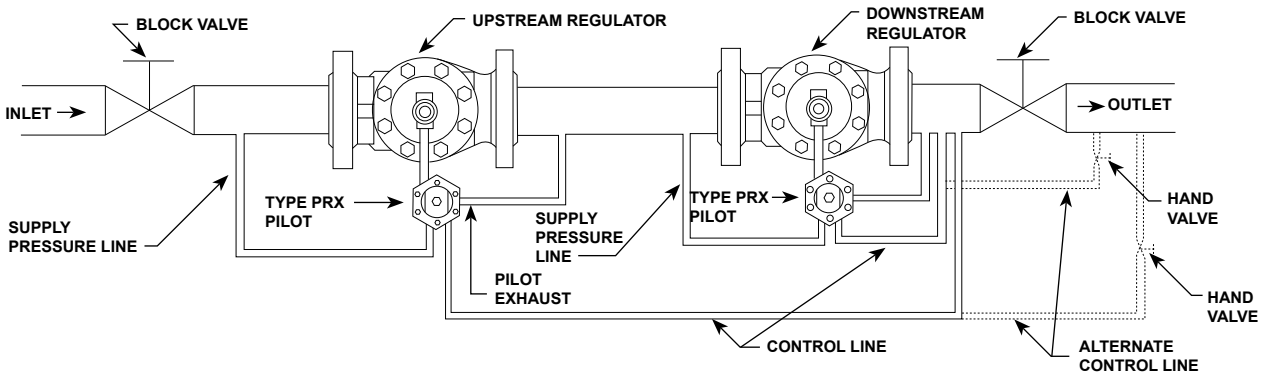
8A—161 Series Upstream Wide-Open Monitoring System Installation



8B—161 Series Upstream or Downstream Wide-Open Monitoring System Installation



8C—161 Series Working Monitoring System Installation



8D—Type PRX Wide-Open Monitoring System Installation (Upstream or Downstream)

Figure 8. *Typical Type EZR Monitoring System Installation Schematics*

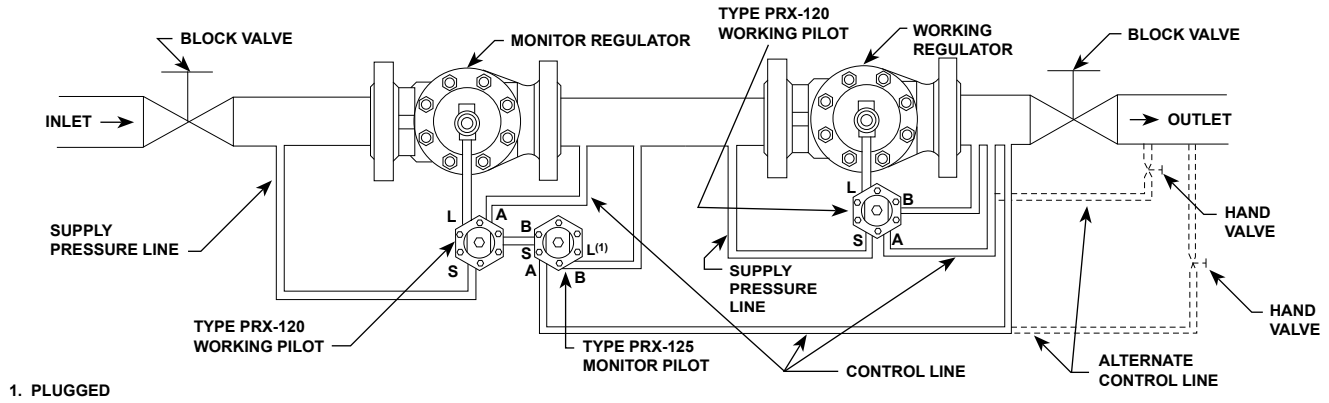


Figure 8. *Typical Type EZR Monitoring System Installation Schematics (continued)*

Table 7. *Diaphragm Temperature Capabilities, Erosion Resistance and Chemical Compatibility*

	17E68 NITRILE (NBR)	17E97(1) NITRILE (NBR)	17E88 FLUOROCARBON (FKM)
Gas Temperature (for lower temperatures contact your local Sales Office)	-20 to 150°F / -29 to 66°C	0 to 150°F / -18 to 66°C	0 to 260°F / -18 to 127°C(2)
General Applications	Best for cold temperatures.	Best for high pressure conditions, i.e. transmission service or high pressure industrial service. It is also the best for abrasive or erosive service applications.	Best for natural gas having aromatic hydrocarbons. It is also the best for high temperature applications.
Heavy Particle Erosion	Fair	Excellent	Good
Natural Gas With:			
Up to 3% aromatic hydrocarbon content(3)	Good	Excellent	Excellent
3 to 15% aromatic hydrocarbon content(3)	Poor	Good	Excellent
15 to 50% aromatic hydrocarbon content(3)	Not recommended	Poor	Excellent
Up to 3% H_2S (hydrogen sulfide or sour gas)	Good	Good	Good
Up to 3% ketone	Fair	Fair	Fair
Up to 10% alcohol	Good	Good	Fair
Up to 3% synthetic lube	Fair	Fair	Good

1. The NPS 6 / DN 150, 17E97 diaphragm will perform in gas temperatures as low as -20°F / -29°C.
2. For differential pressures above 400 psig / 28 bar diaphragm temperature is limited to 150°F / 66°C.
3. The aromatic hydrocarbon content is based on percent volume.

Slam-Shut Device Principle of Operation

The Type EZROSX with slam-shut device can provide either overpressure (OPSO) or overpressure and underpressure (OPSO/UPSO) protection by completely shutting off the flow of gas to the downstream system. The slam shut has a mechanism box and a manometric device. The manometric device is a spring and diaphragm actuator. Its movement activates the detection stage of the mechanism box. The shutoff is a two stage process, the detection stage and the power stage. This separation between detection stage and power stage provides maximum precision, alleviating many false trips caused by environmental vibrations. The slam-shut device includes a bypass valve that will allow pressure to be equalized when resetting the device. Once the slam-shut device has been tripped, it must be manually reset. For more information about the Type EZROSX, contact your local Sales Office.

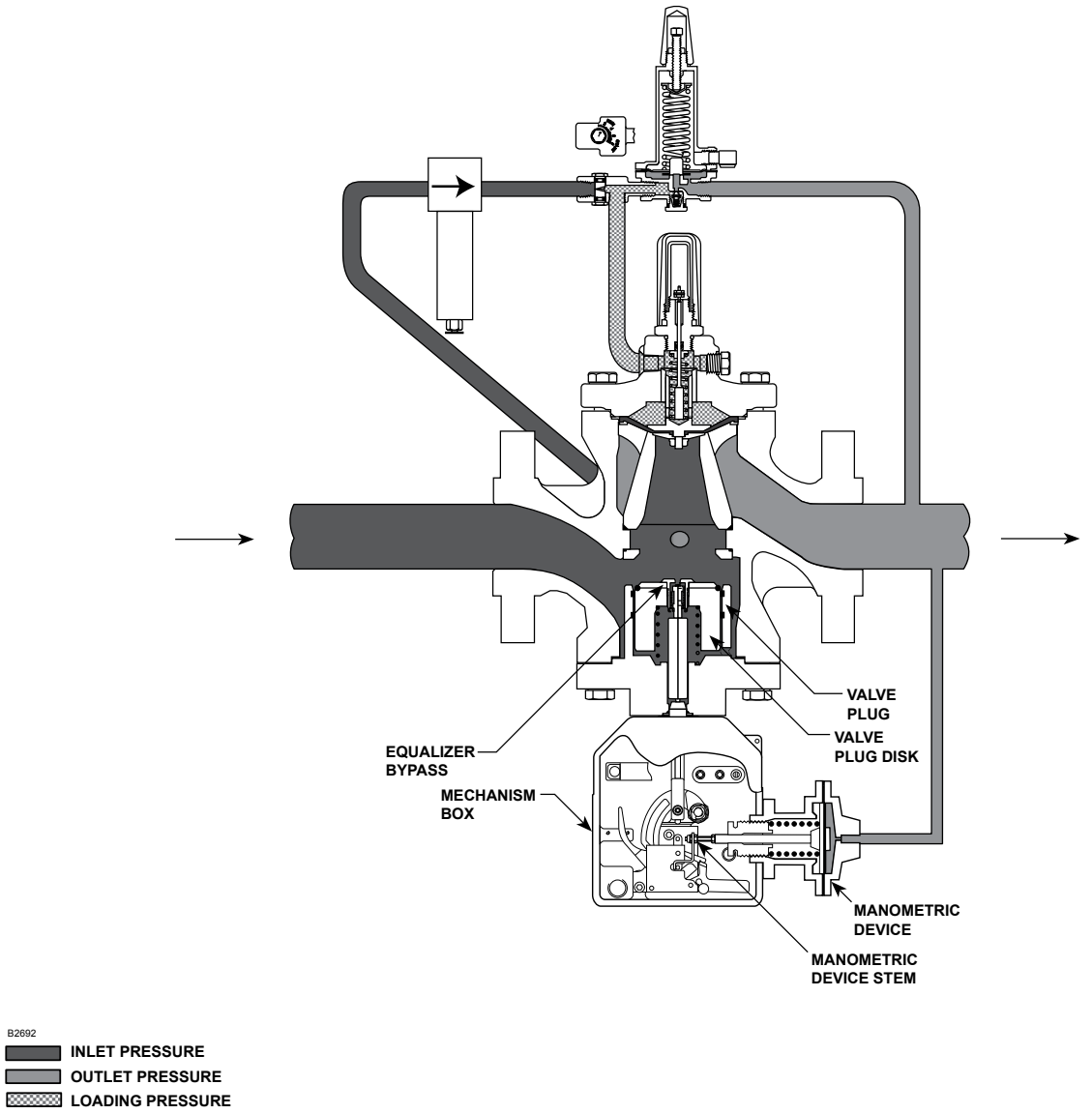


Figure 9. *Type EZROSX with Slam-shut Device Operational Schematic*

Table 8. *Main Valve Maximum Pressure Ratings, Diaphragm Selection Information and Main Spring Selection(1)*

BODY SIZES		DIAPHRAGM MATERIAL	MAXIMUM OPERATING INLET PRESSURE(4)		MAXIMUM OPERATING DIFFERENTIAL PRESSURE(4)		MAXIMUM EMERGENCY INLET AND DIFFERENTIAL PRESSURE		MAIN SPRING COLOR	DIAPHRAGM DESIGNATION
NPS	DN		psig	bar	psid	bar d	psid	bar d		
1 and 1-1/4 x 1	25 and 32 x 25	17E68 Nitrile (NBR) Low temperature	100	6.9	100	6.9	100	6.9	Light Blue	130
			460	32	400	28	460	32	Black	
		17E97 Nitrile (NBR) High-pressure and/or erosion resistance	500	34	500	34	1050	72	Black	
			1050	72	800	55	1050	72	Black with White Stripe(2)	
		17E88 Fluorocarbon (FKM) High aromatic hydrocarbon content resistance	100	6.9	100	6.9	100	6.9	Light Blue	
			500	34	500(3)	34(3)	750	52	Black	
			750	52	500(3)	34(3)	750	52	Black with White Stripe(2)	
2 x 1	50 x 25	17E68 Nitrile (NBR) Low temperature	100	6.9	100	6.9	100	6.9	Light Blue	
			360	25	300	21	360	25	Black with White Stripe	
		17E97 Nitrile (NBR) High-pressure and/or erosion resistance	500	34	500	34	500	34	Black with White Stripe	
			1050	72	800	55	1050	72	Red Stripe(2)	
		17E88 Fluorocarbon (FKM) High aromatic hydrocarbon content resistance	100	6.9	100	6.9	100	6.9	Light Blue	
			750	52	500	34(3)	750	52	Black with White Stripe	
2	50	17E68 Nitrile (NBR) Low temperature	100	6.9	100	6.9	100	6.9	Yellow	
			460	32	400	28	460	32	Green	
		17E97 Nitrile (NBR) High-pressure and/or erosion resistance	500	34	500	34	1050	72	Green	
			1050	72	800	55	1050	72	Red or Purple(2)	
		17E88 Fluorocarbon (FKM) High aromatic hydrocarbon content resistance	100	6.9	100	6.9	100	6.9	Yellow	
			500	34	500(3)	34(3)	750	52	Green	
			750	52	500(3)	34(3)	750	52	Red or Purple(2)	
3	80	17E68 Nitrile (NBR) Low temperature	100	6.9	100	6.9	100	6.9	Yellow	
			360	25	300	21	500	34	Light Blue	
		17E97 Nitrile (NBR) High-pressure and/or erosion resistance	500	34	500	34	1050	72	Light Blue	
			1050	72	800	55	1050	72	Black(2)	
		17E88 Fluorocarbon (FKM) High aromatic hydrocarbon content resistance	100	6.9	100	6.9	100	6.9	Yellow	
			500	34	500(3)	34(3)	750	52	Light Blue	
			750	52	500(3)	34(3)	750	52	Black(2)	
4, 6 x 4 and 8 x 4	100, 150 x 100 and 200 x 100	17E68 Nitrile (NBR) Low temperature	100	6.9	100	6.9	100	6.9	Yellow	
			360	25	300	21	500	34	Green	
		17E97 Nitrile (NBR) High-pressure and/or erosion resistance	100	6.9	100	6.9	100	6.9	Yellow	
			500	34	500	34	1050	72	Green	
			1050	72	800	55	1050	72	Red(2)	
		17E88 Fluorocarbon (FKM) High aromatic hydrocarbon content resistance	100	6.9	100	6.9	100	6.9	Yellow	
			500	34	500(3)	34(3)	750	52	Green	
			750	52	500(3)	34(3)	750	52	Red(2)	
6, 8 x 6 and 12 x 6	150, 200 x 150 and 300 x 150	17E97 Nitrile (NBR) High-pressure and/or erosion resistance	100	6.9	100	6.9	100	6.9	Yellow	
			500	34	500	34	1050	72	Green	
			1050	72	800	55	1050	72	Red(2)	
		17E88 Fluorocarbon (FKM) High aromatic hydrocarbon content resistance	100	6.9	100	6.9	100	6.9	Yellow	
			500	34	500(3)	34(3)	750	52	Green	
			750	52	500(3)	34(3)	750	52	Red(2)	
8	200	17E97 Nitrile (NBR) High-pressure and/or erosion resistance	100	6.9	100	6.9	100	6.9	Yellow	
			500	34	500	34	1050	72	Green	
			1050	72	800	55	1050	72	Red(2)	

1. See Table 1 for main valve structural design ratings and Table 3 for pilot ratings.
2. The red, black, purple, red stripe and black with white stripe springs are only recommended for applications where the maximum inlet pressure can exceed 500 psig / 34.5 bar.
3. For differential pressures above 400 psid / 27.6 bar d diaphragm temperatures are limited to 150°F / 66°C.
4. These are recommendations that provide the best regulator performance for a typical application. Please contact your local Sales Office for further information if a deviation from the standard recommendations are required.

Table 9. *Main Valve Regulating Flow Coefficients[1] for EZR Series, With or Without Slam-Shut Device*

MAIN VALVE BODY SIZE, NPS / DN	CAGE STYLE, PERCENT OF CAPACITY	LINE SIZE EQUALS BODY SIZE PIPING						2:1 LINE SIZE TO BODY SIZE PIPING					
		With Inlet Strainer			Without Inlet Strainer			With Inlet Strainer			Without Inlet Strainer		
		C_g	C_v	C_1	C_g	C_v	C_1	C_g	C_v	C_1	C_g	C_v	C_1
1 / 25	100%	494	14.8	33.4	494	15.3	32.4	481	14.4	33.4	478	14.6	32.7
	60%	290	10.1	28.7	282	9.8	28.9	286	9.9	29.0	275	9.5	28.9
	30%	145	5.0	28.8	141	4.9	28.7	144	5.0	28.6	139	4.9	28.5
1-1/4 x 1 / 32 x 25	100%	572	17.0	33.7	573	16.5	34.6	547	16.1	34.1	550	15.9	34.7
	60%	283	10.5	26.9	291	10.8	26.9	293	10.9	26.7	303	11.3	26.9
	30%	145	5.5	26.3	149	5.6	26.4	142	5.4	26.1	147	5.6	26.3
2 x 1 / 50 x 25	100%	650	18.4	35.3	650	18.4	35.3	648	18.2	35.6	645	18.2	35.4
	60%	294	10.9	27.0	294	10.9	27.0	294	10.9	27.0	294	10.9	27.0
	30%	145	5.1	28.3	145	5.1	28.2	145	5.1	28.3	145	5.1	28.4
2 / 50	100%	1890	50.8	37.2	1970	54.6	36.1	1800	50.4	35.7	1840	53.0	34.7
	60%	1040	35.6	29.2	1050	36.3	28.9	1020	35.9	28.4	1020	35.9	28.4
	30%	570	21.4	26.6	570	21.4	26.6	560	21.5	26.0	560	21.5	26.0
3 / 80	100%	3550	91.4	38.8	3720	99.9	37.2	3390	90.6	37.4	3510	97.1	36.1
	60%	2000	70.3	28.5	2000	70.3	28.5	1970	67.5	29.2	1970	68.3	28.8
	30%	980	38.0	25.8	980	38.0	25.8	970	36.9	26.3	970	36.9	26.3
4 / 100	100%	5690	147	38.7	5830	154	37.9	5540	145	38.2	5640	151	37.4
	60%	3360	124	27.1	3360	124	27.1	3300	122	27.0	3300	121	27.3
	30%	1710	66.5	25.7	1710	66.5	25.7	1690	66.3	25.5	1690	66.8	25.3
6 x 4 / 150 x 100	100%	6150	159	38.7	6290	166	37.9	6142	161	38.2	6242	167	37.4
	60%	3790	140	27.1	3810	141	27.1	3930	146	27.0	3890	143	27.3
	30%	1900	74	25.7	1910	74	25.7	1970	77	25.5	1950	77	25.3
8 x 4 / 200 x 100	100%	6030	156	38.7	6170	163	37.9	5934	155	38.2	6034	161	37.4
	60%	3640	134	27.1	3700	137	27.1	3720	138	27.0	3730	137	27.3
	30%	1830	71	25.8	1860	72	25.8	1870	73	25.6	1880	74	25.3
6 / 150	100%	11,600	325	35.7	12,000	337	35.6	11,200	314	35.7	11,700	329	35.6
	60%	7120	239	29.8	7200	241	29.9	7150	240	29.8	7230	242	29.9
	30%	3560	135	26.4	3560	134	26.6	3570	135	26.4	3590	135	26.6
8 x 6 / 200 x 150	100%	13,400	376	35.7	13,700	385	35.6	12,940	363	35.7	13,360	376	35.6
	60%	8250	277	29.8	8290	277	29.9	8280	278	29.8	8320	279	29.9
	30%	4150	157	26.4	4150	156	26.6	4160	157	26.4	4180	157	26.6
12 x 6 / 300 x 150	100%	13,600	381	35.7	13,700	385	35.6	13,130	368	35.7	13,360	376	35.6
	60%	8210	276	29.8	8220	275	29.9	8240	277	29.8	8250	276	29.9
	30%	4110	155	26.4	4110	155	26.6	4120	156	26.4	4140	156	26.6
8 / 200	100%	19,700	505	39	20,100	517	38.9	19,500	503	38.8	19,700	509	38.7

1. K_m for the NPS 1 / DN 25 body size at 100% capacity is 0.88, the NPS 2 / DN 50 is 0.92, the NPS 3 / DN 80 is 0.94, the NPS 4 / DN 100 is 0.84, and the NPS 6 / DN 150 is 0.82.

Table 10. *Main Valve Wide-Open Flow Coefficients for EZR Series, With or Without Slam-Shut Device*

MAIN VALVE BODY SIZE, NPS / DN	CAGE STYLE, PERCENT OF CAPACITY	LINE SIZE EQUALS BODY SIZE PIPING						2:1 LINE SIZE TO BODY SIZE PIPING					
		With Inlet Strainer			Without Inlet Strainer			With Inlet Strainer			Without Inlet Strainer		
		C_g	C_v	C_1	C_g	C_v	C_1	C_g	C_v	C_1	C_g	C_v	C_1
1 / 25	100%	509	15.2	33.5	509	15.7	32.5	495	14.8	33.5	493	15.0	32.9
	60%	299	10.4	28.7	291	10.1	28.8	295	10.1	29.0	284	9.8	28.9
	30%	149	5.2	28.8	145	5.1	28.7	148	5.2	28.6	143	5.0	28.5
1-1/4 x 1 / 32 x 25	100%	590	17.5	33.7	590	17.0	34.6	564	16.5	34.1	566	16.3	34.7
	60%	291	10.8	26.9	299	11.2	26.9	301	11.3	26.7	312	11.6	26.9
	30%	149	5.7	26.3	154	5.8	26.4	146	5.6	26.1	151	5.8	26.3
2 x 1 / 50 x 25	100%	670	19.0	35.3	670	19.0	35.3	667	18.7	35.6	664	18.7	35.4
	60%	303	11.2	27.0	303	11.2	27.0	303	11.2	27.0	303	11.2	27.0
	30%	149	5.3	28.3	149	5.3	28.2	149	5.3	28.3	149	5.3	28.4
2 / 50	100%	1950	52.4	37.2	2030	56.2	36.1	1850	51.8	35.7	1900	54.6	34.7
	60%	1070	36.6	29.2	1080	37.4	28.9	1050	37.0	28.4	1050	37.0	28.4
	30%	590	22.2	26.6	590	22.2	26.6	580	22.3	26.0	580	22.3	26.0
3 / 80	100%	3660	94.1	38.8	3830	102.9	37.2	3490	93.3	37.4	3620	100.2	36.1
	60%	2060	72.4	28.5	2060	72.4	28.5	2030	69.5	29.2	2030	70.0	28.8
	30%	1010	39.1	25.8	1010	39.1	25.8	1000	38.0	26.3	1000	38.0	26.3
4 / 100	100%	5860	151	38.7	6000	158	37.9	5710	149	38.2	5810	155	37.4
	60%	3460	128	27.1	3460	128	27.1	3400	125	27.3	3400	125	27.3
	30%	1760	68.5	25.7	1770	68.2	26.0	1740	68.2	25.5	1740	68.8	25.3
6 x 4 / 150 x 100	100%	6250	162	38.7	6390	169	37.9	6131	161	38.2	6231	167	37.4
	60%	3850	142	27.1	3870	143	27.1	3920	144	27.3	3880	142	27.3
	30%	1940	75	25.7	1940	75	26.0	1970	77	25.5	1950	77	25.3
8 x 4 / 200 x 100	100%	6100	158	38.7	6240	165	37.9	5930	155	38.2	6030	161	37.4
	60%	3680	136	27.1	3750	138	27.1	3720	136	27.3	3720	136	27.3
	30%	1850	72	25.8	1880	72	26.1	1870	73	25.6	1880	74	25.3
6 / 150	100%	11,950	335	35.7	12,360	348	35.5	11,540	323	35.7	12,050	339	35.5
	60%	7330	246	29.8	7420	248	29.9	7360	247	29.8	7450	249	29.9
	30%	3670	139	26.5	3670	138	26.6	3680	139	26.5	3700	139	26.6
8 x 6 / 200 x 150	100%	13,800	386	35.7	14,110	397	35.5	13,330	373	35.7	13,760	387	35.6
	60%	8490	285	29.8	8540	286	29.9	8520	286	29.8	8570	287	29.9
	30%	4280	162	26.5	4280	161	26.6	4290	162	26.5	4310	162	26.6
12 x 6 / 300 x 150	100%	14,010	392	35.7	14,110	397	35.5	13,530	379	35.7	13,760	387	35.6
	60%	8450	284	29.8	8470	283	29.9	8480	285	29.8	8,500	284	29.9
	30%	4240	160	26.5	4240	159	26.6	4250	160	26.5	4,270	160	26.6
8 / 200	100%	20,300	520	39.0	20,700	533	38.8	20,100	518	38.8	20,300	524	38.7

Table 11. *Pilot Flow Coefficients*

161AY SERIES				161EB SERIES				TYPE PRX		
Orifice Size	C_g	C_v	C_1	Orifice Size	C_g	C_v	C_1	C_g	C_v	C_1
3/32-inch / 2.4 mm 1/8-inch / 3.2 mm 1/4-inch / 6.4 mm	6.9 12.3 50	0.20 0.35 1.43	35 35 35	1/8-inch / 3.18 mm	8.5	0.28	30.4	10.5	0.36	29

Table 12. *Restrictor Flow Coefficients*

SET ON START		SET ON RUN		C_1
C_g	C_v	C_g	C_v	
6	0.17	1	0.03	35

Table 13. *Capacities for EZR Series with Type 161AY or 161AYM Pilot*

INLET PRESSURE		OUTLET PRESSURE		CAPACITIES IN THOUSANDS OF SCFH / Nm³/h OF 0.6 SPECIFIC GRAVITY NATURAL GAS USING 1:1 LINE SIZE TO BODY SIZE PIPING WITHOUT INLET STRAINER											
				NPS 1 / DN 25		NPS 2 / DN 50		NPS 3 / DN 80		NPS 4 / DN 100		NPS 6 / DN 150		NPS 8 / DN 200	
psig	bar	psig	bar	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h
25	1.7	up to 2.5 3 5 7	up to 0.17 0.21 0.35 0.48	- - - -	- - - -	101 95 93 - - - -	2.7 2.5 2.5 - - - -	191 177 173 - - - -	5.1 4.7 4.6 - - - -	299 275 268 260	8.0 7.4 7.2 7.0	586 583 571 556	15.7 15.6 15.3 14.9	941 936 912 884	25.2 25.1 24.4 23.7
30	2.1	up to 4.5 7	up to 0.31 0.48	28.0 - - - -	0.7 - - - -	114 105	3.1 2.8	215 196	5.8 5.2	336 304	9.0 8.1	660 646	17.7 17.3	1062 1033	28.5 27.7
35	2.4	up to 6 7	up to 0.41 0.48	31.3 31.1	0.8 0.8	126 119	3.4 3.2	239 223	6.4 6.0	374 346	10.0 9.3	738 732	19.7 19.6	1187 1177	31.8 31.5
40 45 50 55	2.8 3.1 3.4 3.8	up to 7	up to 0.48	34.5 37.9 41.2 44.4	0.9 1.0 1.1 1.2	139 152 164 177	3.7 4.1 4.4 4.7	262 286 310 334	7.0 7.7 8.3 8.9	411 449 487 524	11.0 12.0 13.1 14.0	817 900 981 1062	21.9 24.1 26.3 28.5	1317 1455 1592 1727	35.3 39.0 42.7 46.3
60 65 70 75	4.1 4.5 4.8 5.2	up to 7	up to 0.48	47.6 50.8 54.0 57.2	1.3 1.4 1.4 1.5	190 203 215 228	5.1 5.4 5.8 6.1	358 382 406 430	9.6 10.2 10.9 11.5	562 599 637 675	15.1 16.1 17.1 18.1	1143 1223 1302 1381	30.6 32.8 34.9 37.0	1862 1996 2129 2261	49.9 53.5 57.1 60.6
80 90 100 125 150	5.5 6.2 6.9 8.6 10.3	up to 7	up to 0.48	60.3 66.6 72.9 88.4 104	1.6 1.8 1.9 2.4 2.8	241 253 266 355 419	6.5 6.8 7.1 9.5 11.2	454 478 502 670 790	12.2 12.8 13.5 18.0 21.2	712 750 787 1051 1239	19.1 20.1 21.1 28.2 33.2	1460 1617 1773 2163 2551	39.1 43.3 47.5 58.0 68.4	2394 2658 2920 3575 4227	64.2 71.2 78.3 95.8 113
Note: Blank areas indicate where minimum main valve differential pressure is not met.															

- continued -

Table 13. *Capacities for EZR Series with Type 161AY or 161AYM Pilot (continued)*

INLET PRESSURE		OUTLET PRESSURE		CAPACITIES IN THOUSANDS OF SCFH / Nm³/h OF 0.6 SPECIFIC GRAVITY NATURAL GAS USING 1:1 LINE SIZE TO BODY SIZE PIPING WITHOUT INLET STRAINER											
				NPS 1-1/4 x 1 / DN 32 x 25		NPS 2 x 1 / DN 50 x 25		NPS 6 x 4 / DN 150 x 100		NPS 8 x 4 / DN 200 x 100		NPS 8 x 6 / DN 200 x 150		NPS 12 x 6 / DN 300 x 150	
psig	bar	psig	bar	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h
25	1.7	up to 2.5 3 5 7	up to 0.17 0.21 0.35 0.48	- - - -		- - - -	- - - -	299 297 290 281	8.0 8.0 7.8 7.5	294 292 285 277	7.9 7.8 7.6 7.4	669 666 652 634	17.9 17.8 17.5 17.0	669 666 652 634	17.9 17.8 17.5 17.0
30	2.1	up to 4.5 7	up to 0.31 0.48	35.9 35.1	1.0 0.9	35.9 - - - -	1.0 - - - -	337 328	9.0 8.8	331 323	8.9 8.7	754 737	20.2 19.8	754 737	20.2 19.8
35	2.4	up to 6 7	up to 0.41 0.48	40.1 39.8	1.1 1.1	40.1 39.8	1.1 1.1	376 374	10.1 10.0	370 367	9.9 9.8	842 836	22.6 22.4	842 836	22.6 22.4
40 45 50 55	2.8 3.1 3.4 3.8	up to 7	up to 0.48	44.4 48.9 53.3 57.7	1.2 1.3 1.4 1.5	44.4 48.9 53.3 57.7	1.2 1.3 1.4 1.5	417 461 504 546	11.2 12.4 13.5 14.6	411 454 496 537	11.0 12.2 13.3 14.4	933 1027 1120 1213	25.0 27.5 30.0 32.5	933 1027 1120 1213	25.0 27.5 30.0 32.5
60 65 70 75	4.1 4.5 4.8 5.2	up to 7	up to 0.48	62.0 66.3 70.6 74.9	1.7 1.8 1.9 2.0	62.0 66.3 70.6 74.9	1.7 1.8 1.9 2.0	588 630 672 714	15.8 16.9 18.0 19.1	579 620 661 702	15.5 16.6 17.7 18.8	1304 1396 1486 1577	34.9 37.4 39.8 42.3	1304 1396 1486 1577	34.9 37.4 39.8 42.3
80 90 100 125 150	5.5 6.2 6.9 8.6 10.3	up to 7	up to 0.48	79.2 87.7 96.1 117 138	2.1 2.3 2.6 3.1 3.7	79.2 87.7 96.1 117 138	2.1 2.3 2.6 3.1 3.7	755 838 920 1126 1330	20.2 22.5 24.7 30.2 35.7	743 825 906 1108 1309	19.9 22.1 24.3 29.7 35.1	1667 1846 2025 2470 2913	44.7 49.5 54.3 66.2 78.1	1667 1846 2025 2470 2913	44.7 49.5 54.3 66.2 78.1
Note: Blank areas indicate where minimum main valve differential pressure is not met.															

Table 14. *Capacities for EZR Series with Type 161EB, 161EBM or PRX Pilot*

INLET PRESSURE		OUTLET PRESSURE		CAPACITIES IN THOUSANDS OF SCFH / Nm³/h OF 0.6 SPECIFIC GRAVITY NATURAL GAS USING 1:1 LINE SIZE TO BODY SIZE PIPING WITHOUT INLET STRAINER											
				NPS 1 / DN 25		NPS 2 / DN 50		NPS 3 / DN 80		NPS 4 / DN 100		NPS 6 / DN 150		NPS 8 / DN 200	
psig	bar	psig	bar	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h
30	2.1	5	0.35	28	0.7	107	2.8	200	5.4	310	8.3	658	17.6	1056	28.3
		10	0.69	- - - -	- - - -	101	2.7	188	5.0	292	7.8	623	16.7	991	26.6
40	2.8	up to 8	up to 0.55	34	0.9	139	3.7	262	7.0	411	11.0	812	21.8	1307	35.0
		15	1.0	33	0.9	125	3.3	232	6.2	360	9.6	767	20.6	1221	32.7
		20	1.38	- - - -	- - - -	117	3.1	216	5.8	335	9.0	719	19.3	1134	30.4
50	3.5	up to 12	up to 0.83	41	1.1	164	4.4	310	8.3	487	13.1	961	25.8	1548	41.5
		15	1.0	40	1.1	154	4.1	287	7.7	446	12.0	945	25.3	1516	40.6
		25	1.7	38	1.0	141	3.8	261	7.0	404	10.8	865	23.2	1368	36.7
		30	2.1	- - - -	- - - -	131	3.5	242	6.5	373	10.0	804	21.5	1263	33.8
60	4.1	up to 16	up to 1.1	47	1.3	190	5.1	358	9.6	562	15.1	1111	29.8	1788	47.9
		25	1.7	45	1.2	172	4.6	319	8.5	495	13.3	1055	28.3	1680	45.0
		35	2.4	42	1.1	155	4.1	287	7.7	444	11.9	954	25.6	1501	40.2
		40	2.8	- - - -	- - - -	143	3.8	264	7.1	409	11.0	882	23.6	1380	37.0
75	5.2	up to 22	up to 1.5	57	1.5	228	6.1	430	11.5	675	18.1	1334	35.8	2149	57.6
		35	2.4	54	1.4	203	5.4	378	10.1	585	15.7	1250	33.5	1986	53.2
		50	3.5	47	1.3	175	4.7	322	8.6	498	13.3	1075	28.8	1684	45.1
		55	3.8	- - - -	- - - -	160	4.3	296	7.9	456	12.2	988	26.5	1541	41.3
100	6.9	up to 32	up to 2.2	72	1.9	291	7.8	550	14.7	863	23.1	1707	45.7	2750	73.7
		60	4.1	65	1.7	241	6.5	447	12.0	691	18.5	1485	39.8	2340	62.7
		75	5.2	55	1.5	203	5.4	375	10.1	578	15.5	1252	33.6	1952	52.3
		80	5.5	- - - -	- - - -	186	5.0	342	9.2	527	14.1	1144	30.7	1777	47.6
125	8.6	up to 43	up to 3.0	88	2.4	355	9.5	670	18.0	1051	28.2	2076	55.6	3342	89.6
		60	4.1	85	2.3	321	8.6	595	15.9	923	24.7	1969	52.8	3134	84.0
		90	6.2	71	1.9	261	7.0	482	12.9	745	20.0	1609	43.1	2515	67.4
		105	7.2	- - - -	- - - -	208	5.6	382	10.2	589	15.8	1282	34.4	1985	53.2
150	10.3	up to 52	up to 3.6	104	2.8	419	11.2	790	21.2	1239	33.2	2453	65.7	3953	106
		60	4.1	103	2.8	393	10.5	732	19.6	1137	30.5	2412	64.6	3868	104
		95	6.5	92	2.5	342	9.2	632	16.9	977	26.2	2102	56.3	3308	88.7
		130	9.0	- - - -	- - - -	228	6.1	419	11.2	646	17.3	1406	37.7	2175	58.3
200	13.8	up to 73	up to 5.0	135	3.6	546	14.6	1030	27.6	1615	43.3	3194	85.6	5145	138
		110	7.6	127	3.4	479	12.8	887	23.8	1375	36.9	2941	78.8	4662	125
		150	10.3	106	2.8	390	10.5	720	19.3	1112	29.8	2406	64.5	3753	101
		180	12.4	- - - -	- - - -	264	7.1	484	13.0	746	20.0	1628	43.6	2511	67.3
300	20.7	up to 115	up to 7.9	198	5.3	800	21.4	1510	40.5	2367	63.4	4677	125	7531	202
		170	11.7	186	5.0	698	18.7	1295	34.7	2006	53.8	4292	115	6801	182
		225	15.5	157	4.2	577	15.5	1065	28.5	1645	44.1	3557	95.3	5553	149
		280	19.3	- - - -	- - - -	324	8.7	594	15.9	914	24.5	1998	53.5	3076	82.4
400	27.6	up to 155	up to 10.7	261	7.0	1054	28.2	1990	53.3	3119	83.6	6169	165	9936	266
		200	13.8	253	6.8	961	25.8	1785	47.8	2769	74.2	5899	158	9405	252
		250	17.2	237	6.3	883	23.7	1635	43.8	2530	67.8	5432	146	8568	230
		300	20.9	208	5.6	764	20.5	1410	37.8	2177	58.3	4709	126	7352	197
		350	24.1	158	4.2	572	15.3	1052	28.2	1621	43.4	3530	94.6	5458	146
500	34.5	up to 196	up to 13.5	324	8.7	1308	35.1	2470	66.2	3871	104	7656	205	12,331	330
		250	17.2	315	8.4	1195	32.0	2220	59.5	3444	92.3	7334	197	11,697	313
		300	20.7	299	8.0	1121	30.0	2078	55.7	3217	86.2	6894	185	10,900	292
		350	24.1	275	7.4	1018	27.3	1881	50.4	2907	77.9	6268	168	9827	263
600	41.4	up to 237	up to 16.3	387	10.4	1562	41.9	2950	79.1	4623	124	9143	245	14,726	395
		250	17.2	386	10.3	1481	39.7	2760	74.0	4287	115	9079	243	14,593	391
		300	20.7	376	10.1	1428	38.3	2655	71.2	4119	111	8770	235	13,989	375
		350	24.1	362	9.70	1358	36.4	2517	67.5	3899	104	8346	224	13,217	354
700	48.3	up to 278	up to 19.2	450	12.1	1816	48.7	3430	91.9	5375	144	10,630	285	17,121	459
		300	20.7	447	11.9	1715	46.0	3196	85.7	4964	133	10,519	282	16,892	453
		350	24.1	438	11.7	1662	44.5	3090	82.8	4793	128	10,205	273	16,282	436
800	55.2	up to 350	up to 24.1	509	13.6	2070	55.5	3910	105	6127	164	11,958	320	19,189	514
900	62.1	up to 350	up to 24.1	577	15.5	2325	62.3	4389	118	6879	184	13,651	366	22,008	590
1000	68.9	up to 350	up to 24.1	644	17.3	2579	69.1	4869	130	7631	205	15,306	410	24,771	664
1050	72.4	up to 350	up to 24.1	677	18.1	2706	72.5	5109	137	8007	215	16,124	432	26,138	700

Note: Blank areas indicate where minimum main valve differential pressure is not met.

- continued -

Table 14. *Capacities for EZR Series with Type 161EB, 161EBM or PRX Pilot (continued)*

INLET PRESSURE		OUTLET PRESSURE		CAPACITIES IN THOUSANDS OF SCFH / Nm³/h OF 0.6 SPECIFIC GRAVITY NATURAL GAS USING 1:1 LINE SIZE TO BODY SIZE PIPING WITHOUT INLET STRAINER											
				NPS 1-1/4 x 1 / DN 32 x 25		NPS 2 x 1 / DN 50 x 25		NPS 6 x 4 / DN 150 x 100		NPS 8 x 4 / DN 200 x 100		NPS 8 x 6 / DN 200 x 150		NPS 12 x 6 / DN 300 x 150	
psig	bar	psig	bar	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h
30	2.1	5	0.35	32	0.9	36	1.0	335	8.9	330	8.8	751	20.1	751	20.1
		10	0.69	- - - -	- - - -	- - - -	- - - -	315	8.4	310	8.3	712	19.1	712	19.1
40	2.8	up to 8	up to 0.55	39	1.0	44	1.2	415	11.1	408	10.9	927	24.8	927	24.8
		15	1.0	37	1.0	42	1.1	388	10.4	382	10.2	876	23.5	876	23.5
		20	1.4	- - - -	- - - -	- - - -	- - - -	362	9.7	356	9.5	821	22.0	821	22.0
50	3.5	up to 12	up to 0.8	46	1.2	52	1.4	491	13.2	483	12.9	1098	29.4	1098	29.4
		15	1.0	46	1.2	51	1.4	481	12.9	473	12.7	1079	28.9	1079	28.9
		25	1.7	42	1.1	47	1.3	436	11.7	429	11.5	988	26.5	988	26.5
		30	2.1	- - - -	- - - -	- - - -	- - - -	403	10.8	397	10.6	918	24.6	918	24.6
60	4.1	up to 16	up to 1.1	54	1.4	60	1.6	567	15.2	558	15.0	1268	34.0	1268	34.0
		25	1.7	51	1.4	57	1.5	534	14.3	526	14.1	1204	32.3	1204	32.3
		35	2.4	46	1.2	52	1.4	479	12.8	471	12.6	1089	29.2	1089	29.2
		40	2.8	- - - -	- - - -	- - - -	- - - -	441	11.8	434	11.6	1007	27.0	1007	27.0
75	5.2	up to 22	up to 1.5	64	1.7	73	2.0	681	18.3	671	18.0	1523	40.8	1523	40.8
		35	2.4	61	1.6	68	1.8	632	16.9	622	16.7	1427	38.2	1427	38.2
		50	3.5	52	1.4	59	1.6	538	14.4	529	14.2	1227	32.9	1227	32.9
		55	3.8	- - - -	- - - -	- - - -	- - - -	493	13.2	485	13.0	1128	30.2	1128	30.2
100	6.9	up to 32	up to 2.2	82	2.2	93	2.5	872	23.4	858	23.0	1949	52.2	1949	52.2
		60	4.1	72	1.9	81	2.2	746	20.0	734	19.7	1695	45.4	1695	45.4
		75	5.2	61	1.6	68	1.8	624	16.7	614	16.5	1430	38.3	1430	38.3
		80	5.5	- - - -	- - - -	- - - -	- - - -	569	15.2	560	15.0	1306	35.0	1306	35.0
125	8.6	up to 43	up to 3.0	100	2.7	113	3.0	1060	28.4	1043	28.0	2370	63.5	2370	63.5
		60	4.1	95	2.5	107	2.9	997	26.7	981	26.3	2248	60.2	2248	60.2
		90	6.2	79	2.1	88	2.4	804	21.5	791	21.2	1837	49.2	1837	49.2
		105	7.2	- - - -	- - - -	- - - -	- - - -	636	17.0	626	16.8	1463	39.2	1463	39.2
150	10.3	up to 52	up to 3.6	118	3.2	133	3.6	1253	33.6	1233	33.0	2801	75.1	2801	75.1
		60	4.1	117	3.1	131	3.5	1228	32.9	1208	32.4	2754	73.8	2754	73.8
		95	6.6	102	2.7	114	3.1	1055	28.3	1039	27.8	2400	64.3	2400	64.3
		130	9.0	- - - -	- - - -	- - - -	- - - -	697	18.7	686	18.4	1606	43.0	1606	43.0
200	13.8	up to 73	up to 5.0	154	4.1	174	4.7	1631	43.7	1605	43.0	3647	97.7	3647	97.7
		110	7.6	143	3.8	160	4.3	1485	39.8	1461	39.2	3357	90.0	3357	90.0
		150	10.3	117	3.1	131	3.5	1200	32.2	1181	31.7	2746	73.6	2746	73.6
		180	12.4	- - - -	- - - -	- - - -	- - - -	806	21.6	793	21.2	1858	49.8	1858	49.8
300	20.7	up to 115	up to 7.9	226	6.1	254	6.8	2388	64.0	2350	63.0	5339	143	5339	143
		170	11.7	208	5.6	234	6.3	2166	58.0	2132	57.1	4900	131	4900	131
		225	15.5	174	4.7	194	5.2	1776	47.6	1747	46.8	4061	109	4061	109
		280	19.3	- - - -	- - - -	- - - -	- - - -	987	26.5	972	26.0	2281	61.1	2281	61.1
400	27.6	up to 155	up to 10.7	298	8.0	335	9.0	3150	84.4	3100	83.1	7043	189	7043	189
		200	13.8	286	7.7	321	8.6	2990	80.1	2943	78.9	6734	180	6734	180
		250	17.2	264	7.1	296	7.9	2732	73.2	2689	72.1	6202	166	6202	166
		300	20.7	230	6.2	257	6.9	2351	63.0	2313	62.0	5376	144	5376	144
		350	24.1	173	4.6	193	5.2	1750	46.9	1722	46.2	4030	108	4030	108
500	34.5	up to 196	up to 13.5	369	9.9	416	11.1	3910	105	3847	103	8740	234	8740	234
		250	17.2	355	9.5	399	10.7	3719	99.7	3659	98.1	8373	224	8373	224
		300	20.9	335	9.0	375	10.1	3473	93.1	3418	91.6	7870	211	7870	211
		350	24.1	305	8.2	342	9.2	3139	84.1	3089	82.8	7156	192	7156	192
600	41.4	up to 237	up to 16.3	441	11.8	497	13.3	4669	125	4595	123	10,438	280	10,438	280
		250	17.2	438	11.7	493	13.2	4629	124	4556	122	10,365	278	10,365	278
		300	20.9	424	11.4	477	12.8	4447	119	4376	117	10,012	268	10,012	268
		350	24.1	405	10.9	454	12.2	4210	113	4143	111	9528	255	9528	255
700	48.3	up to 278	up to 19.2	513	13.7	578	15.5	5428	145	5342	143	12,136	325	12,136	325
		300	20.7	508	13.6	572	15.3	5360	144	5275	141	12,009	322	12,009	322
		350	24.1	494	13.2	555	14.9	5175	139	5093	136	11,650	312	11,650	312
800	55.2	up to 350	up to 24.1	578	15.5	650	17.4	6090	163	5993	161	13652	366	13,652	366
900	62.1	up to 350	up to 24.1	658	17.6	742	19.9	6976	187	6865	184	15,584	418	15,584	418
1000	68.9	up to 350	up to 24.1	737	19.8	831	22.3	7844	210	7719	207	17,474	468	17,474	468
1050	72.4	up to 350	up to 24.1	776	20.8	875	23.5	8273	222	8141	218	18,408	493	18,408	493

Note: Blank areas indicate where minimum main valve differential pressure is not met.

Table 15. *Capacities for EZR Series with PRX Series*

INLET PRESSURE		OUTLET PRESSURE		CAPACITIES IN THOUSANDS OF SCFH / Nm³/h OF 0.6 SPECIFIC GRAVITY NATURAL GAS USING 1:1 LINE SIZE TO BODY SIZE PIPING WITHOUT INLET STRAINER											
				NPS 1 / DN 25		NPS 2 / DN 50		NPS 3 / DN 80		NPS 4 / DN 100		NPS 6 / DN 150		NPS 8 / DN 200	
psig	bar	psig	bar	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h
300	21.0	250	17.0	134	3.6	489	13.1	901	24.1	1389	37.2	3019	80.9	4682	125
		280	19.0	- - - -	- - - -	324	8.7	594	15.9	914	24.5	1998	53.5	3076	82.4
400	28.0	250	17.0	237	6.3	883	23.7	1635	43.8	2530	67.8	5432	146	8568	230
		300	21.0	208	5.6	764	20.5	1410	37.8	2177	58.3	4709	126	7352	197
		350	24.0	158	4.2	572	15.3	1052	28.2	1621	43.4	3530	94.6	5458	146
		380	26.0	- - - -	- - - -	374	10.0	686	18.4	1056	28.3	2311	61.9	3552	95.2
500	34.0	250	17.0	315	8.4	1195	32.0	2220	59.5	3444	92.3	7334	197	11,697	313
		300	21.0	299	8.0	1121	30.0	2078	55.7	3217	86.2	6894	185	10,900	292
		350	24.0	275	7.4	1018	27.3	1881	50.4	2907	77.9	6268	168	9827	263
		400	28.0	238	6.4	871	23.3	1604	43.0	2475	66.3	5367	144	8348	224
		450	31.0	178	4.8	644	17.3	1183	31.7	1823	48.9	3977	107	6137	164
		480	33.0	- - - -	- - - -	418	11.2	768	20.6	1182	31.7	2586	69.3	3972	106
600	41.0	250	17.0	386	10.3	1481	39.7	2760	74.0	4287	115	9079	243	14,593	391
		300	21.0	376	10.1	1428	38.3	2655	71.2	4119	110	8770	235	13,989	375
		400	28.0	340	9.1	1264	33.9	2337	62.6	3614	96.9	7777	208	12,229	328
		500	34.0	265	7.1	966	25.9	1777	47.6	2741	73.5	5956	160	9240	248
		550	38.0	196	5.2	709	19.0	1302	34.9	2006	53.8	4379	117	6749	181
		580	40.0	- - - -	- - - -	459	12.3	841	22.5	1295	34.7	2834	76.0	4352	117
700	48.0	250	17.0	453	12.1	1755	47.0	3278	87.9	5099	134	10,751	288	17,381	466
		300	21.0	447	11.9	1715	46.0	3196	85.7	4964	133	10,519	282	16,892	453
		400	28.0	424	11.4	1594	42.7	2956	79.2	4579	123	9793	262	15,526	416
		500	34.0	377	10.1	1393	37.3	2572	68.9	3975	107	8577	230	13,435	360
		600	41.0	290	7.8	1052	28.2	1936	51.9	2984	80.0	6493	174	10,055	269
800	55.0	up to 300	up to 21.0	515	13.8	2070	55.5	3910	105	6127	164	12,202	327	19,697	528
		400	28.0	499	13.4	1896	50.8	3525	94.5	5468	147	11,640	312	18,574	498
		500	34.0	467	12.5	1745	46.8	3231	86.6	5001	134	10,732	288	16,938	454
		600	41.0	411	11.0	1512	40.5	2789	74.7	4308	115	9314	250	14,547	390
		700	48.0	312	8.4	1133	30.4	2082	55.8	3209	86.0	6990	187	10,809	290
900	62.0	up to 350	up to 24.0	577	15.5	2325	62.3	4389	118	6879	184	13,651	366	22,008	590
		400	28.0	571	15.3	2184	58.5	4067	109	6316	169	13,396	359	21,486	576
		500	34.0	547	14.7	2064	55.3	3830	103	5935	159	12,679	340	20,133	540
		600	41.0	507	13.6	1886	50.5	3487	93.5	5394	145	11,604	311	18,250	489
		700	48.0	442	11.8	1622	43.5	2991	80.2	4617	124	10,000	268	15,584	418
1000	69.0	up to 400	up to 28.0	639	17.1	2579	69.1	4869	130	7631	205	15,096	405	24,316	652
		500	34.0	622	16.7	2364	63.4	4394	118	6817	183	14,510	389	23,158	621
		600	41.0	592	15.9	2220	59.5	4115	110	6372	171	13,650	366	21,592	579
		700	48.0	545	14.6	2017	54.1	3727	99.9	5762	154	12,420	333	19,480	522
1050	72.0	up to 400	up to 28.0	673	18.0	2706	72.5	5109	137	8007	215	15,932	427	25,710	689
		500	34.0	658	17.6	2509	67.4	4668	125	7245	194	15,398	413	24,627	660
		600	41.0	632	16.9	2379	63.8	4412	118	6826	183	14,618	392	23,181	621
		700	48.0	591	15.8	2196	58.9	4063	109	6283	168	13,517	362	21,261	570
		900	62.0	432	11.6	1572	42.2	2892	77.6	4459	120	9694	260	15,024	403

1. For outlet pressures above 435 psig / 30 bar, use Type PRX-AP pilot rather than Type PRX.
Note: Blank areas indicate where minimum main valve differential pressure is not met.

- continued -

Table 15. *Capacities for EZR Series with PRX Series (continued)*

INLET PRESSURE		OUTLET PRESSURE		CAPACITIES IN THOUSANDS OF SCFH / Nm³/h OF 0.6 SPECIFIC GRAVITY NATURAL GAS USING 1:1 LINE SIZE TO BODY SIZE PIPING WITHOUT INLET STRAINER											
				NPS 1-1/4 x 1 / DN 32 x 25		NPS 2 x 1 / DN 50 x 25		NPS 6 x 4 / DN 150 x 100		NPS 8 x 4 / DN 200 x 100		NPS 8 x 6 / DN 200 x 150		NPS 12 x 6 / DN 300 x 150	
psig	bar	psig	bar	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h	SCFH	Nm³/h
300	21.0	250	17.2	148	4.0	165	4.4	1500	40.2	1476	39.6	3447	92.4	3447	92.4
		280	19.3	- - - -	- - - -	- - - -	- - - -	987	26.5	972	26.0	2281	61.1	2281	61.1
400	28.0	250	17.2	264	7.1	296	7.9	2732	73.2	2689	72.1	6202	166	6202	166
		300	21.0	230	6.2	257	6.9	2351	63.0	2313	62.0	5376	144	5376	144
		350	24.1	173	4.6	193	5.2	1750	46.9	1722	46.2	4030	108	4030	108
		380	26.2	- - - -	- - - -	- - - -	- - - -	1141	30.6	1123	30.1	2638	70.7	2638	70.7
500	34.5	250	17.2	355	9.5	399	10.7	3719	99.7	3659	98.1	8373	224	8373	224
		300	21.0	335	9.0	375	10.1	3473	93.1	3418	91.6	7870	211	7870	211
		350	24.1	305	8.2	342	9.2	3139	84.1	3089	82.8	7156	192	7156	192
		400	28.0	262	7.0	293	7.8	2672	71.6	2630	70.5	6128	164	6128	164
		450	31.0	195	5.2	217	5.8	1969	52.8	1937	51.9	4540	122	4540	122
		480	33.1	- - - -	- - - -	- - - -	- - - -	1276	34.2	1256	33.7	2952	79.1	2952	79.1
600	41.4	250	17.2	438	11.7	493	13.2	4629	124	4556	122	10,365	278	10,365	278
		300	21.0	424	11.4	477	12.8	4447	119	4376	117	10,012	268	10,012	268
		400	28.0	378	10.1	424	11.4	3903	105	3841	103	8879	238	8879	238
		500	34.5	291	7.8	325	8.7	2960	79.3	2913	78.1	6800	182	6800	182
		550	38.0	215	5.8	239	6.4	2166	58.0	2131	57.1	4999	134	4999	134
		580	40.0	- - - -	- - - -	- - - -	- - - -	1398	37.5	1376	37.0	3236	86.7	3236	86.7
700	48.0	250	17.2	518	13.9	584	15.6	5505	148	5418	145	12,274	329	12,274	329
		300	21.0	508	13.6	572	15.3	5360	144	5275	141	12,009	322	12,009	322
		400	28.0	475	12.7	533	14.3	4944	132	4865	130	11,180	300	11,180	300
		500	34.5	418	11.2	467	12.5	4292	115	4224	113	9793	262	9793	262
		600	41.4	318	8.5	354	9.5	3222	86.4	3171	85.0	7413	199	7413	199
800	55.2	up to 300	up to 21.0	588	15.8	663	17.8	6241	167	6142	165	13,931	373	13,931	373
		400	28.0	563	15.1	633	17.0	5904	158	5810	156	13,289	356	13,289	356
		500	34.5	522	14.0	584	15.7	5400	145	5314	142	12,253	328	12,253	328
		600	41.4	454	12.2	508	13.6	4651	125	4577	123	10,634	285	10,634	285
		700	48.0	342	9.2	381	10.2	3465	92.9	3410	91.4	7980	214	7980	214
900	62.0	up to 350	up to 24.1	658	17.6	742	19.9	6976	187	6865	184	15,584	418	15,584	418
		400	28.0	647	17.3	728	19.5	6820	183	6711	180	15,294	410	15,294	410
		500	34.5	615	16.5	690	18.5	6408	172	6306	169	14,475	388	14,475	388
		600	41.4	565	15.1	632	16.9	5824	156	5731	154	13,247	355	13,247	355
		700	48.0	488	13.1	545	14.6	4985	134	4906	131	11,416	306	11,416	306
1000	69.0	up to 400	up to 28.0	728	19.5	820	22.0	7709	207	7587	203	17,235	462	17,235	462
		500	34.5	702	18.8	789	21.1	7361	197	7243	194	16,566	444	16,566	444
		600	41.4	663	17.8	743	19.9	6880	184	6770	181	15,584	418	15,584	418
		700	48.0	605	16.2	677	18.1	6221	167	6122	164	14,179	380	14,179	380
1050	72.4	up to 400	up to 28.0	768	20.6	866	23.2	8147	218	8018	215	18,189	487	18,189	487
		500	34.5	745	20.0	837	22.4	7823	210	7699	206	17,579	471	17,579	471
		600	41.4	709	19.0	796	21.3	7381	198	7263	195	16,688	447	16,688	447
		700	48.0	658	17.6	736	19.7	6784	182	6677	179	15,432	414	15,432	414
		900	62.0	474	12.7	529	14.2	4811	129	4719	127	11,068	297	11,068	297

1. For outlet pressures above 435 psig / 30 bar, use Type PRX-AP pilot rather than Type PRX.
Note: Blank areas indicate where minimum main valve differential pressure is not met.

Table 16. *Manometric Device Specifications*[1]

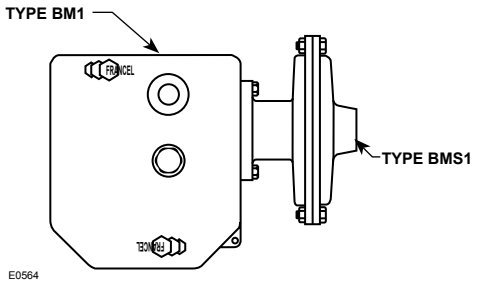
SPRING RANGE		SPRING COLOR	SPRING PART NUMBER	MAXIMUM SENSING INLET PRESSURE		MANOMETRIC SENSING DEVICE TYPE	MANOMETRIC SENSING DEVICE STYLE	SETPOINT TOLERANCE[1]		MAXIMUM DIFFERENCE BETWEEN OVERPRESSURE AND UNDERPRESSURE[2]	
psig	bar			psig	bar			psig	bar	psig	bar
4.02 to 14.1 inches w.c.	10 to 35 mbar	Purple	T14232T0012	75	5.2	162	Diaphragm	0.058	0.004	0.145	0.01
9.97 to 33.2 inches w.c.	25 to 83 mbar	Orange	T14233T0012					0.073	0.005	0.363	0.03
18 inches w.c. to 2.0 psig	45 mbar to 0.14 bar	Red	T14234T0012					0.145	0.01	0.725	0.05
1.0 to 3.5	0.07 to 0.24	Yellow	T14235T0012					0.203	0.01	0.870	0.06
1.7 to 5.6	0.11 to 0.38	Green	T14236T0012					0.261	0.02	2.18	0.15
2 to 11	0.14 to 0.75	Gray	T14238T0012					0.725	0.05	5.08	0.35
4 to 19	0.25 to 1.3	Brown	T14239T0012					1.16	0.08	8.70	0.60
7 to 33	0.45 to 2.3	Black	T14240T0012					2.47	0.17	16.0	1.1
15 to 75	1.0 to 5.1	Blue	T14237T0012	235	16.2	71		5.08	0.35	36.3	2.5
31 to 161	2.1 to 11.0	Brown	T14239T0012					10.2	0.70	79.8	5.5
59 to 235	4.0 to 16.0	Black	T14240T0012					23.2	1.6	145	10.0
235 to 323	16.0 to 22.0	Brown	T14239T0012	1470	100	27	Piston	43.5	3.0	Requires use of Types BMS1 and BMS2	
323 to 588	22.0 to 40.0	Black	T14240T0012					94.3	6.5		
588 to 808	40.0 to 55.0	Brown	T14239T0012	1470	100	17		102	7.0		
808 to 1470	55.0 to 100	Black	T14240T0012					174	12.0		
81 to 323	5.5 to 22.0	Brown	T14239T0012	514	35.4	236	Bellows	14.5	1.00	145	10.0
122 to 514	8.3 to 35.0	Black	T14240T0012					36.3	2.5	290	20.0
257 to 1058	17.5 to 72.0	Gray	T14238T0012	1058	72.9	315		72.5	5.0	479	33.0

1. Minimum suggested difference between slam-shut set pressure and normal operating pressure of the system.
2. Maximum difference between overpressure and underpressure when using one manometric device (Type BMS1) with tripping hook. For underpressure and overpressure points greater than this maximum number, use a second manometric device (Type BMS2) for underpressure protection.

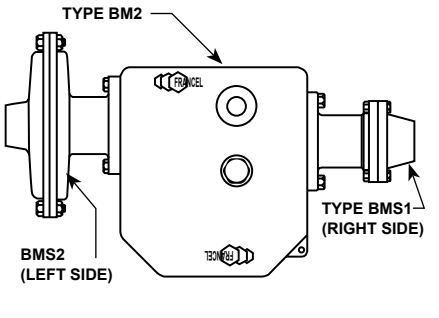
Table 17. *Applications and Construction Guide (See Figure 11)*

APPLICATION	MECHANISM BOX REQUIRED		MANOMETRIC SENSING DEVICE REQUIRED	
	Type BM1	Type BM2	Type BMS1	Type BMS2
Overpressure Shutoff (OPSO)	Yes	No	Yes	No
Underpressure Shutoff (UPSO)				
Overpressure Shutoff (OPSO) and Underpressure Shutoff (UPSO)			Yes[1]	
Overpressure Shutoff (OPSO) and Underpressure Shutoff (UPSO)	No	Yes	Yes[2]	Yes
Overpressure Shutoff (OPSO), Overpressure Shutoff (OPSO) and Underpressure Shutoff (UPSO)			Yes[2]	Yes[1]

1. When using one manometric sensing device (Type BMS1 or BMS2) for both overpressure and underpressure shutoff, make sure that the difference between set pressures falls within the maximum range shown in Table 16.
2. When using two manometric sensing devices (Type BMS1 and a Type BMS2), the Type BMS1 can only be used for high trip.



MECHANISM BOX (TYPE BM1) WITH
1 MANOMETRIC SENSING DEVICE (TYPE BMS1)



MECHANISM BOX (TYPE BM2) WITH
2 MANOMETRIC SENSING DEVICES (TYPES BMS1 AND BMS2)

Figure 10. *Types of Installation (Mounting on Horizontal Pipeline Only)*

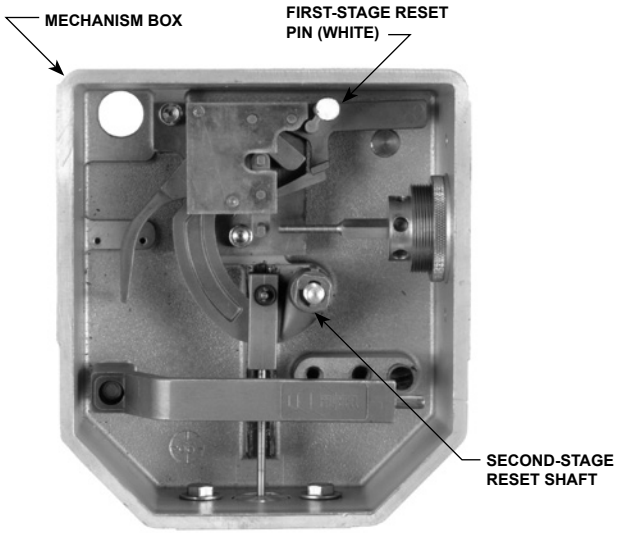


Figure 11. *Slam-Shut Device in Open Position*

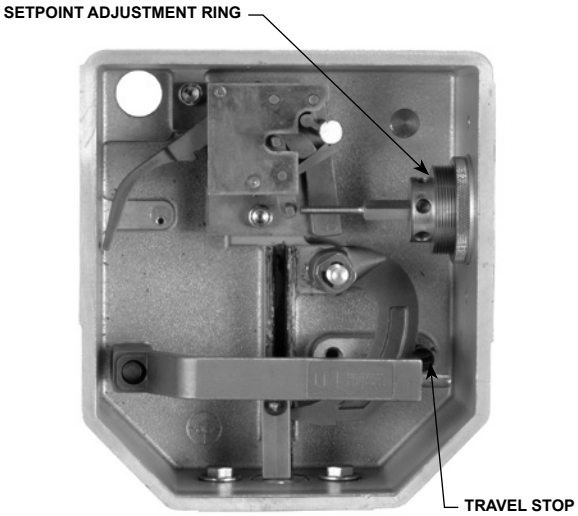
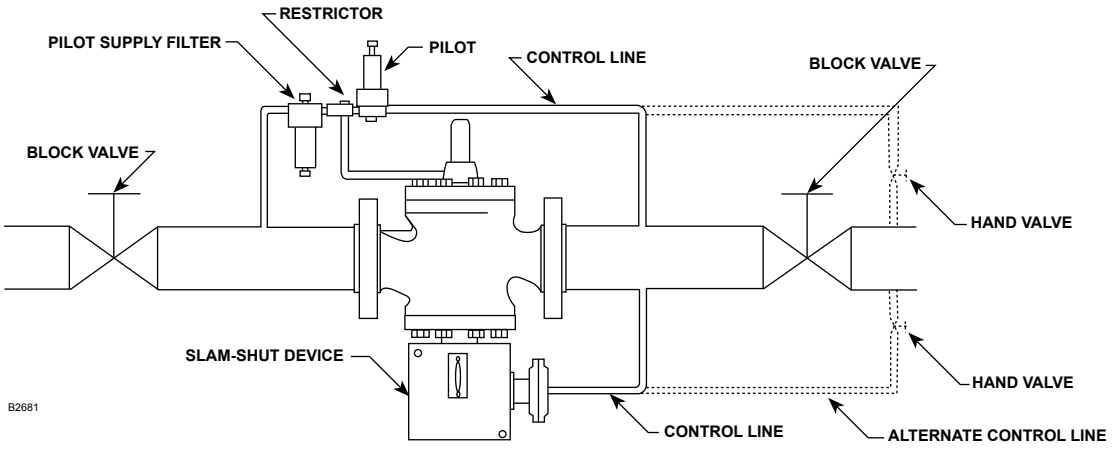


Figure 12. *Slam-Shut Device in Closed Position*

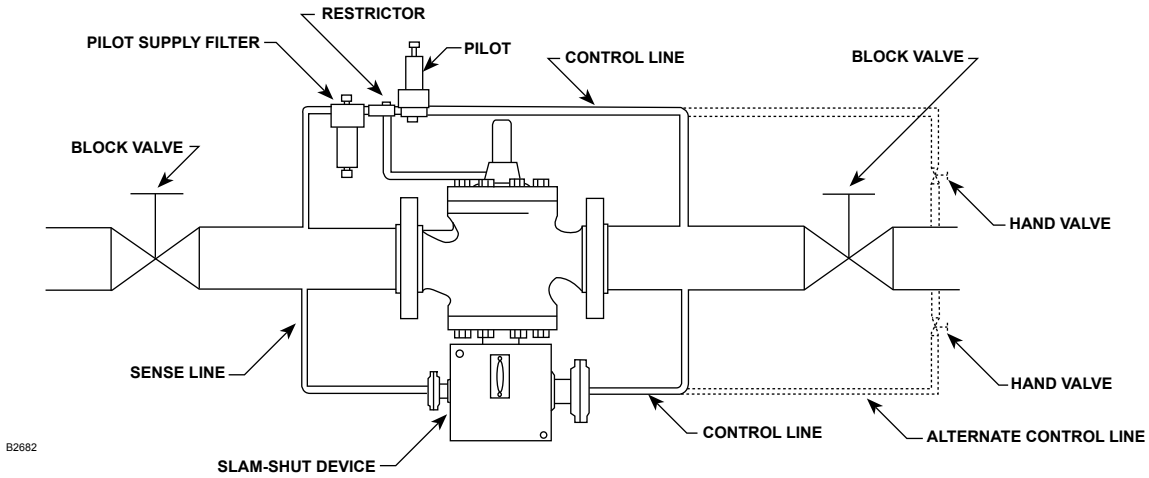
Table 18. *Approximate Weights Including 161EB Series, 161AY Series, PRX Series Pilot and Restrictor*[1][2]

BODY SIZES, NPS / DN	CAST IRON MAIN VALVE BODY, POUNDS / kg			WCC OR LCC STEEL MAIN VALVE BODY, POUNDS / kg				WITH INTEGRAL SLAM SHUT, POUNDS / kg		
	NPT	CL125 FF	CL250 RF	NPT, SWE, or BWE	CL150 RF	CL300 RF	CL600 RF	CL150 RF	CL300 RF	CL600 RF
1 and 1-1/4 / 25 and 32	- - - -	- - - -	- - - -	22 / 10	24 / 11	28 / 13	32 / 15	44 / 20	46 / 21	49 / 22
2 and 2 x 1 / 50 and 50 x 25	52 / 24	50 / 23	59 / 27	51 / 23	54 / 24	58 / 26	65 /29	86 / 39	90 / 41	95 / 43
3 / 80	- - - -	89 / 40	106 / 48	103 / 47	107 / 49	110 / 50	123 / 56	138 / 63	141 / 64	154 / 70
4 / 100		140 / 64	155 / 70	139 / 63	145 / 66	159 / 72	192 / 87	177 / 80	191 / 87	224 / 102
6 x 4 / 150 x 100		- - - -	- - - -	270 / 122	280 / 127	292 / 132	394 / 179	- - - -	- - - -	- - - -
8 x 4 / 200 x 100				390 / 177	461 / 209	515 / 234	600 / 272			
6 / 150		205 / 93	225 / 102	200 / 91	210 / 95	235 / 107	350 / 159	423 / 192	465 / 211	537 / 244
8 x 6 / 200 x 150		- - - -	- - - -	600 / 272	571 / 259	625 / 284	680 / 308	- - - -	- - - -	- - - -
12 x 6 / 300 x 150				1160 / 526	994 / 451	1102 / 500	1590 / 721			
8 / 200				- - - -	635 / 288	685 / 310	790 / 358			

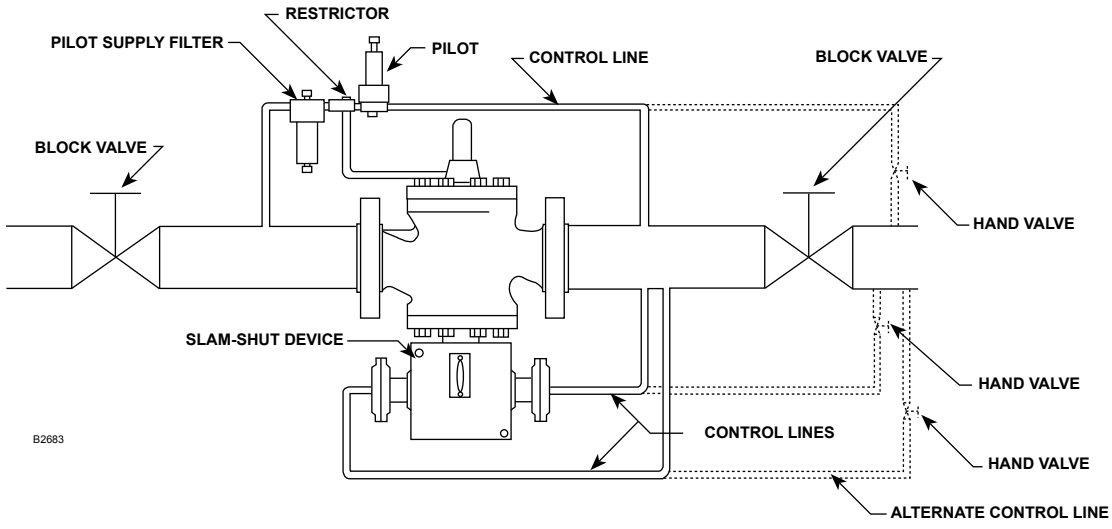
1. Add an additional 15 pounds / 7 kg to get the weight with a 161AY Series pilot.
2. Add an additional 5 pounds / 2 kg to get the weight of PRX Series pilot.



13A—Overpressure and Underpressure Shutoff Using One Manometric Device (This Application Might Require Two Manometric Devices As Shown In Figure 13C)

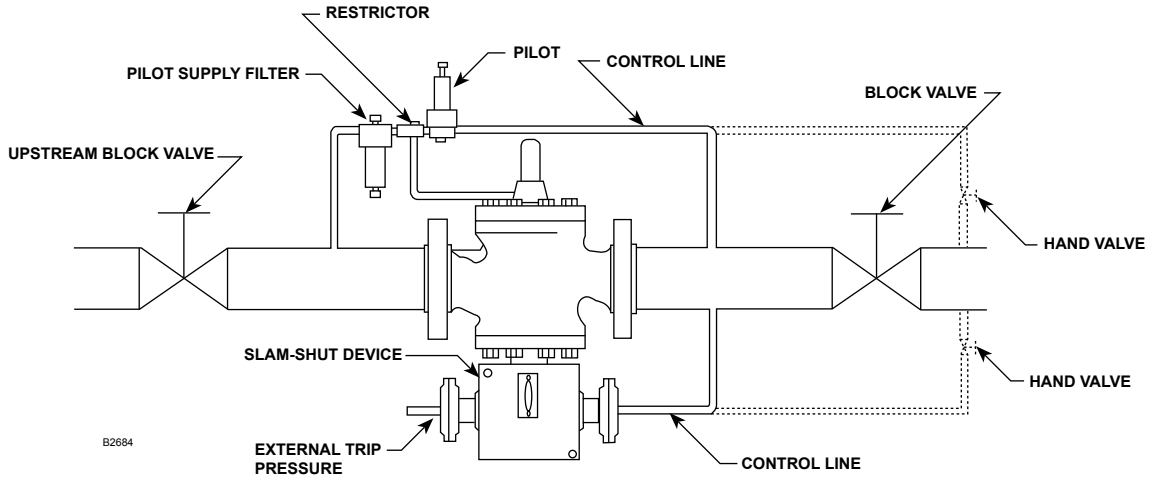


13B—Minimum and Maximum Upstream and Downstream Pressure

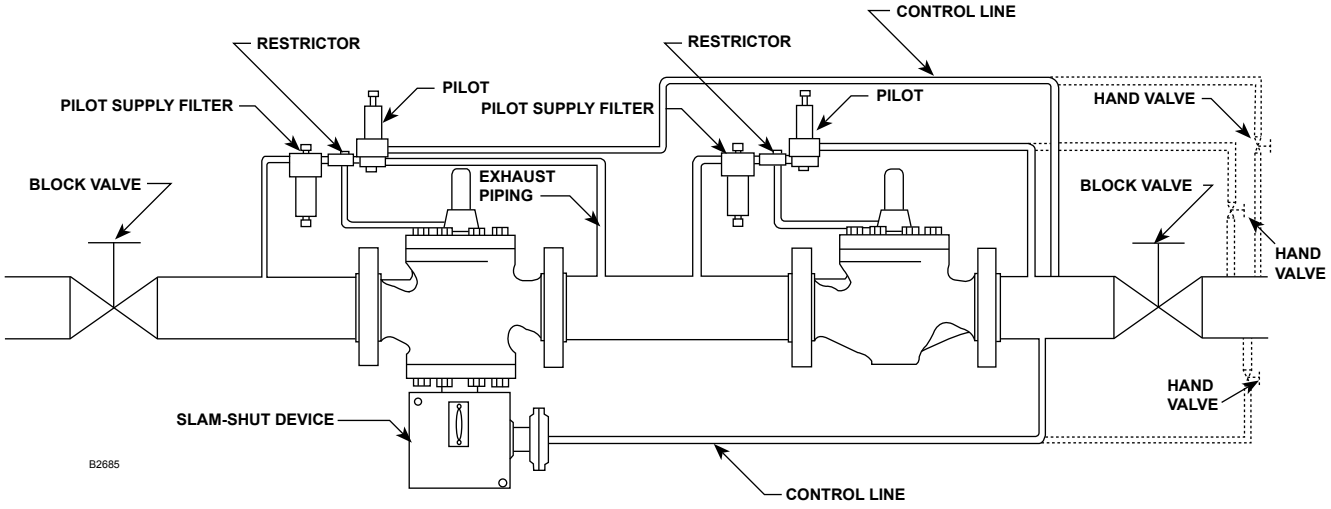


13C—Overpressure and Underpressure Shutoff Using Separate Manometric Devices

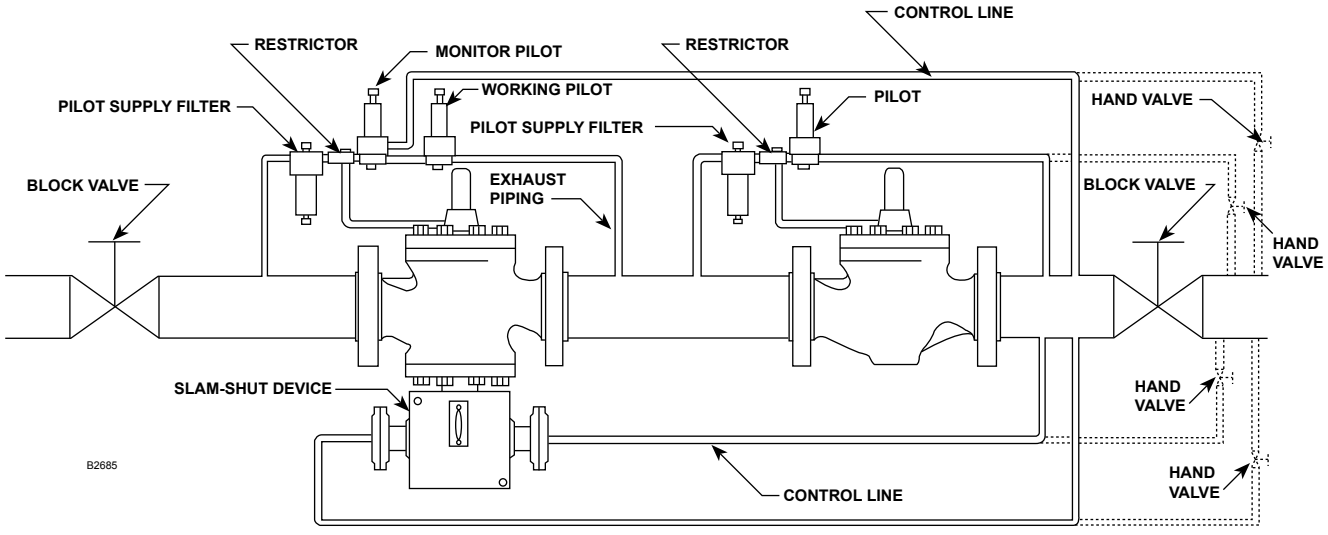
Figure 13. *Type EZROSX with Integral Slam-Shut Device Installation Schematics*



13D—External Signal



13E—Wide-Open Monitoring System with Slam-Shut Device for Overpressure and Underpressure Shutoff Using One Manometric Device (This Application Might Require Two Manometric Devices As Shown In Figure 13F)



13F—Working Monitoring System with Slam-Shut Device for Overpressure and Underpressure Shutoff Using Two Manometric Devices (This Application Might Only Require One Manometric Device As Shown In Figure 13E)

Figure 13. *Type EZROSX with Integral Slam-Shut Device Installation Schematics (continued)*

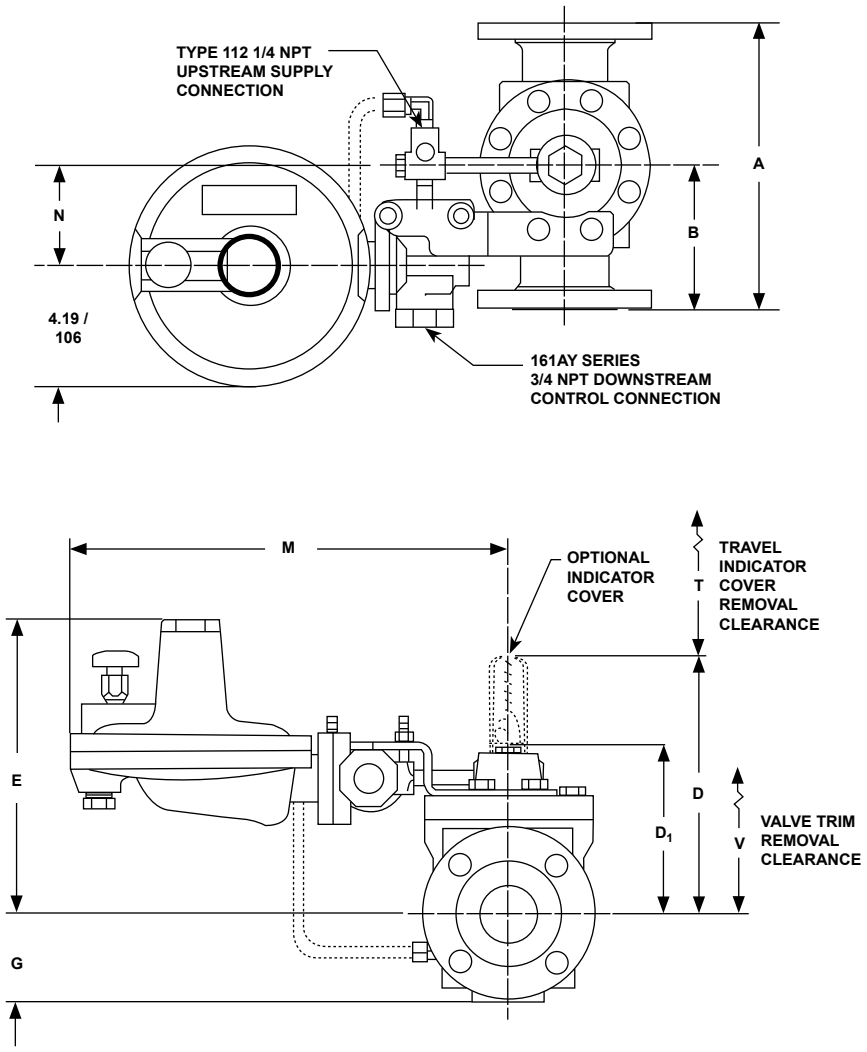
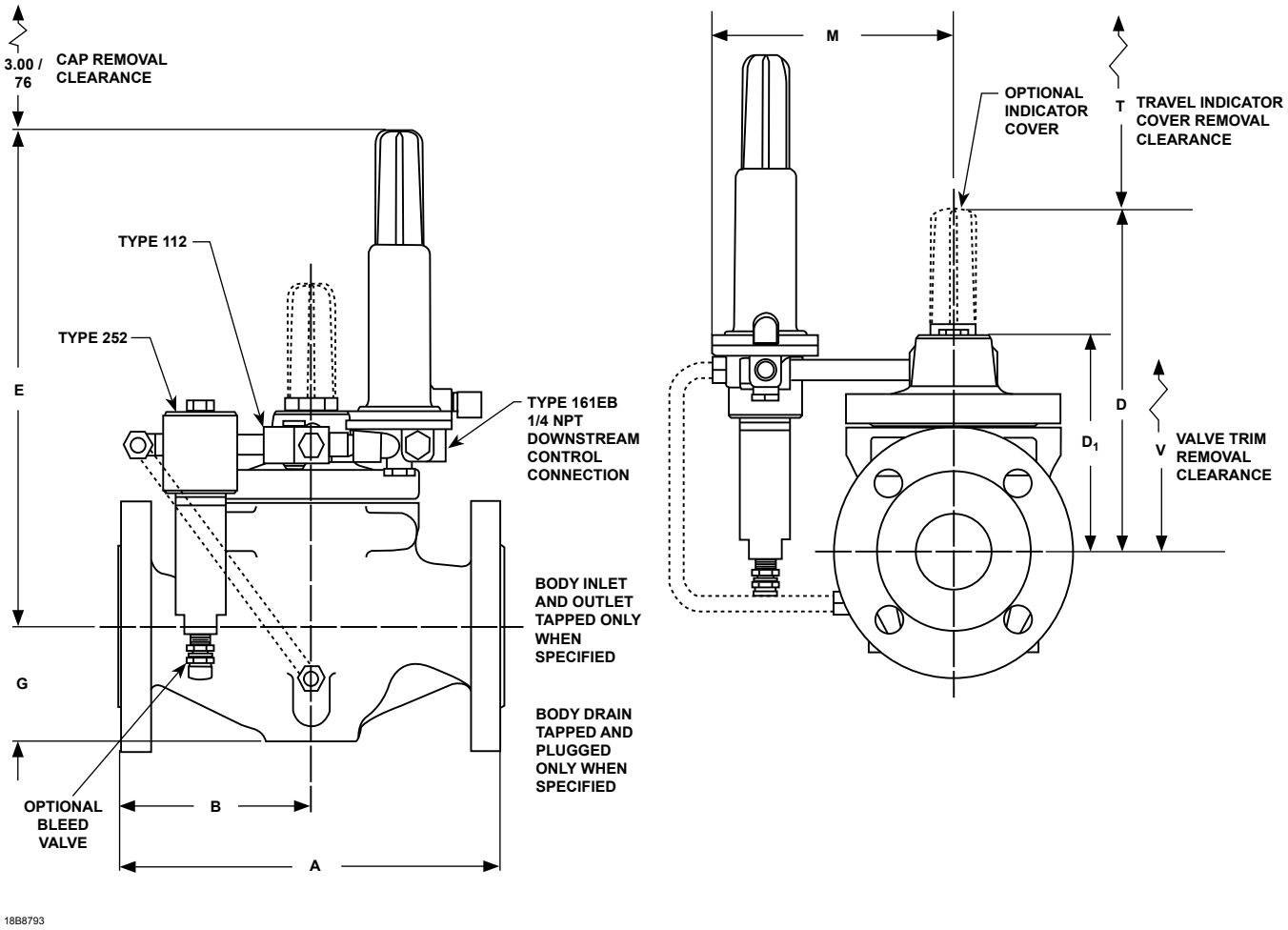


Figure 14. *Typical EZR Dimensions*

Table 19. *Typical EZR Dimensions*

BODY SIZE, NPS / DN	DIMENSIONS INCH / mm													
	A			B			D	D_1	E	G	M	N	T	V
	CL125 RF CL150 RF	CL250 RF CL300 RF	CL600 RF	CL125 RF CL150 RF	CL250 RF CL300 RF	CL600 RF								
2 / 50	10.00 / 254	10.50 / 267	11.25 / 286	5.00 / 127	5.25 / 133	5.62 / 143	8.90 / 226	6.89 / 175	10.17 / 258	3.06 / 78	15.22 / 387	3.47 / 88	2.00 / 51	4.38 / 111
3 / 80	11.75 / 298	12.50 / 317	13.25 / 337	5.88 / 149	6.25 / 159	6.63 / 168	12.58 / 319	9.33 / 267	11.37 / 289	3.81 / 97	15.73 / 400	4.09 / 104		5.75 / 146
4 / 100	13.80 / 353	14.50 / 368	15.50 / 394	6.94 / 176	7.25 / 184	7.75 / 197	13.50 / 343	10.47 / 266	12.75 / 324	5.06 / 129	15.59 / 396	4.62 / 117	2.88 / 73	7.00 / 178



TYPE EZR WITH 161EB SERIES PILOT

INCH / mm

Figure 14. *Typical EZR Dimensions (continued)*

Table 19. *Typical EZR Dimensions (continued)*

BODY SIZE, NPS / DN	DIMENSIONS, INCH / mm												
	A			B			D	D_1	E	G	M	T	V
	CL125 FF CL150 RF	CL250 RF CL300 RF	CL600 RF	CL125 FF CL150 RF	CL250 RF CL300 RF	CL600 RF							
1 / 25	7.25 / 184	7.75 / 197	8.25 / 210	3.62 / 92	3.88 / 99	4.12 / 105	8.67 / 220	6.11 / 155	12.67 / 322	2.50 / 64	6.23 / 158	2.00 / 50.8	8.00 / 203
2 / 50 2 X 1 / 50 x 25	10.00 / 254	10.50 / 267	11.25 / 286	5.00 / 127	5.25 / 133	5.62 / 143	8.90 / 226	6.89 / 175	12.96 / 329	3.06 / 78	6.60 / 168	2.00 / 51	11.00 / 279
3 / 80	11.75 / 298	12.50 / 317	13.25 / 337	5.88 / 149	6.25 / 159	6.63 / 168	12.58 / 319	9.33 / 237	14.99 / 381	3.81 / 97	7.54 / 191	3.80 / 96	19.50 / 495
4 / 100	13.88 / 353	14.50 / 368	15.50 / 394	6.94 / 176	7.25 / 184	7.75 / 197	14.72 / 374	10.47 / 266	16.55 / 420	5.06 / 129	7.38 / 187	3.80 / 96	20.70 / 526
6 / 150	17.75 / 451	18.62 / 473	20.00 / 508	8.88 / 226	9.31 / 236	10.00 / 254	16.49 / 419	12.55 / 319	17.78 / 451	5.31 / 135	9.86 / 250	3.80 / 96	22.80 / 579

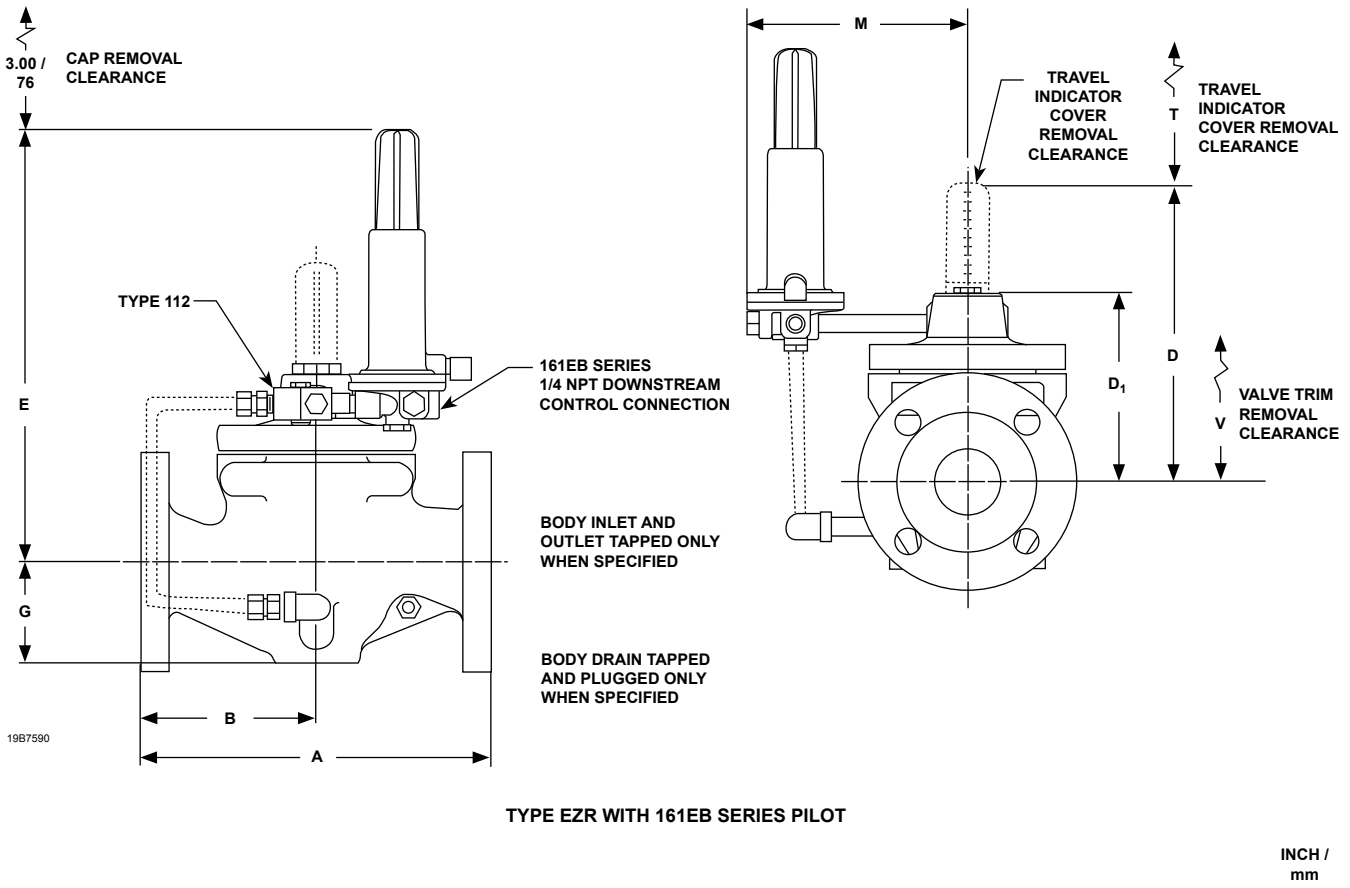
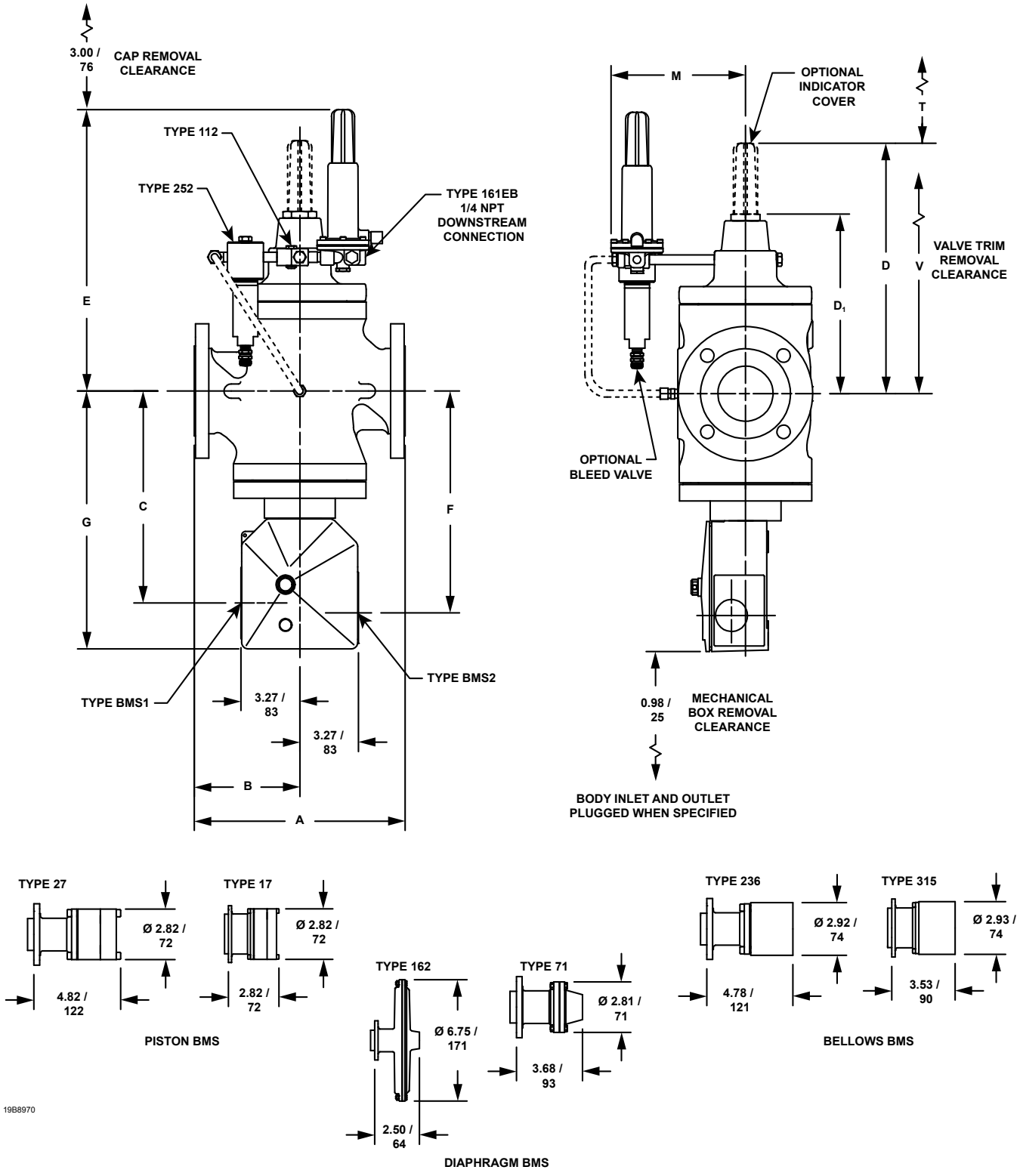


Figure 14. *Typical EZR Dimensions (continued)*

Table 19. *Typical EZR Dimensions (continued)*

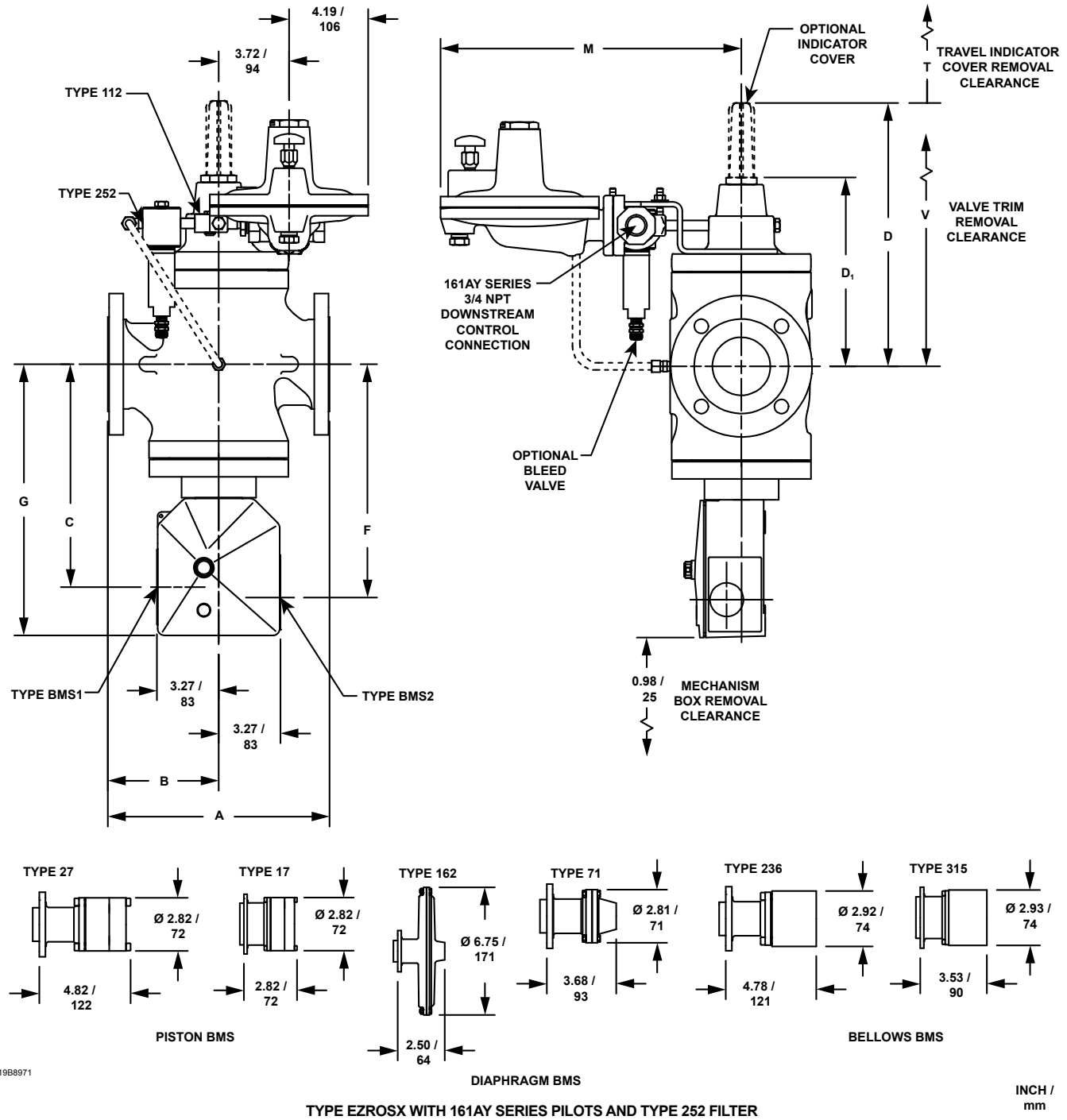
BODY SIZE, NPS / DN	DIMENSIONS, INCH / mm												
	A			B			D	D_1	E	G	M	T	V
	CL150 RF	CL300 RF	CL600 RF	CL150 RF	CL300 RF	CL600 RF							
6 X 4 / 150 X 100	17.75 / 451	18.63 / 473	20.00 / 508	8.88 / 225	9.31 / 236	10.00 / 254	15.75 / 400	11.81 / 300	17.87 / 454	5.31 / 135	8.96 / 228	3.80 / 96	21.60 / 549
8 X 4 / 200 X 100	21.38 / 543	22.38 / 568	24.00 / 610	10.69 / 271	11.19 / 284	12.00 / 305	15.82 / 402	11.88 / 302	17.93 / 455	6.94 / 176	8.96 / 228	3.80 / 96	21.60 / 549



TYPE EZROSX WITH 161EB SERIES PILOTS AND TYPE 252 FILTER

INCH / mm

Figure 15. *Typical EZROSX Dimensions*

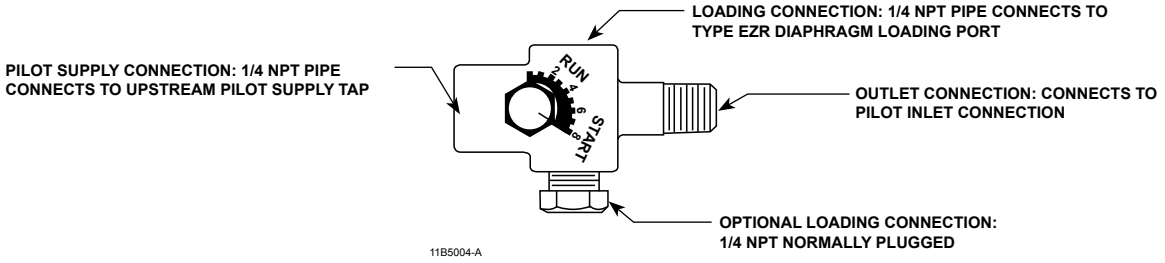


TYPE EZROSX WITH 161AY SERIES PILOTS AND TYPE 252 FILTER

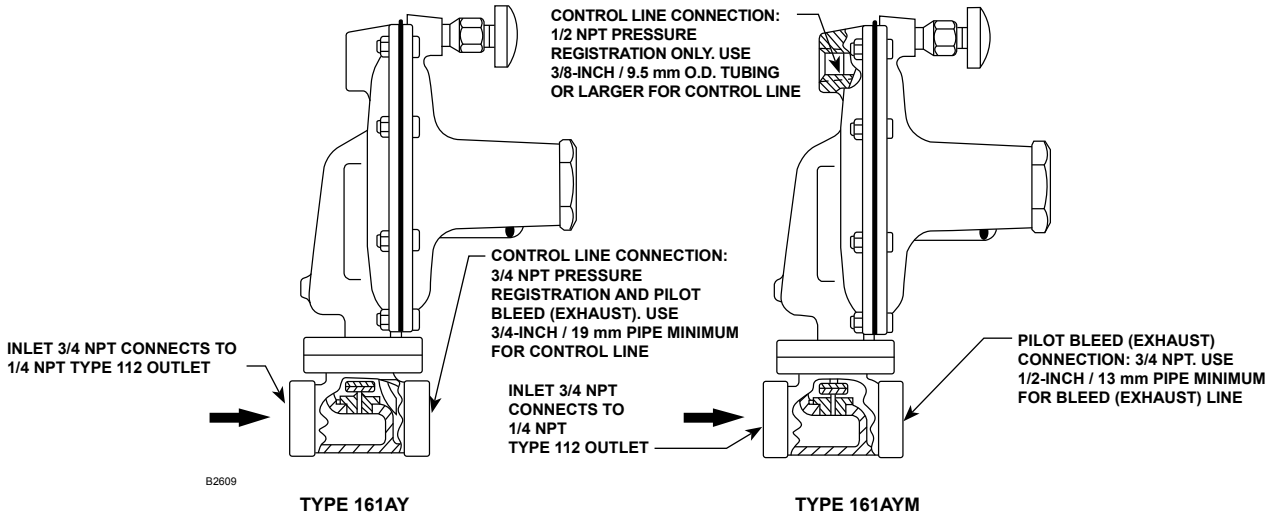
Figure 15. *Typical EZROSX Dimensions (continued)*

Table 19. *Typical EZROSX Dimensions*

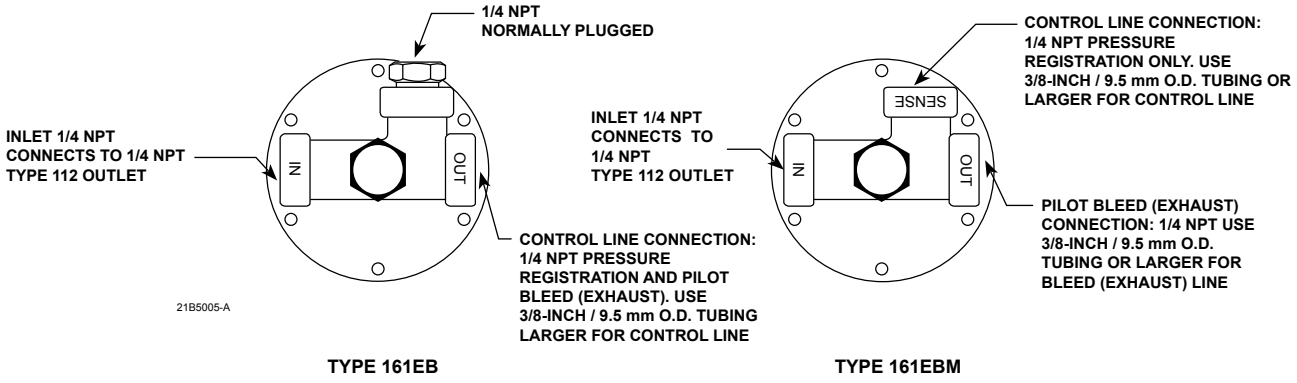
BODY SIZE, NPS / DN	DIMENSIONS INCH / mm															
	A			B			C	D	D_1	E	F	G	M	T	V	
	CL150 RF	CL300 RF	CL600 RF	CL150 RF	CL300 RF	CL600 RF										
1 / 25	7.24 / 184	7.76 / 197	8.27 / 210	3.62 / 92.0	3.88 / 98.5	4.13 / 105	9.78 / 248	9.19 / 233	6.63 / 168	13.22 / 336	10.33 / 262	12.34 / 313	6.23 / 158	2.70 / 68	1.40 / 37	
2 / 50	10.08 / 256	10.59 / 269	11.30 / 287	5.04 / 128	5.30 / 135	5.65 / 144	10.39 / 264	9.55 / 243	7.49 / 190	13.58 / 345	10.94 / 278	12.95 / 329	6.53 / 166	2.00 / 51	11.00 / 279	
3 / 80	11.73 / 298	12.48 / 317	13.27 / 337	5.87 / 149	6.24 / 158	6.63 / 168	11.78 / 299	13.94 / 354	10.00 / 254	15.66 / 398	12.33 / 313	14.34 / 364	7.42 / 188		19.50 / 495	
4 / 100	13.86 / 352	14.49 / 368	15.51 / 394	6.93 / 176	7.24 / 184	7.76 / 197	13.50 / 343	15.22 / 387	11.28 / 286	17.35 / 441	14.05 / 357	16.06 / 408	7.88 / 200	3.75 / 95	20.70 / 526	
6 / 150	17.76 / 451	18.62 / 473	20.0 / 508	8.88 / 225	9.31 / 236	10.0 / 254	12.99 / 330	16.64 / 423	12.70 / 323	17.93 / 455	13.54 / 344	15.55 / 395	9.81 / 249		22.80 / 579	


LOADING CONNECTION: 1/4 NPT PIPE CONNECTS TO TYPE EZR DIAPHRAGM LOADING PORT
PILOT SUPPLY CONNECTION: 1/4 NPT PIPE CONNECTS TO UPSTREAM PILOT SUPPLY TAP
RUN
START
OUTLET CONNECTION: CONNECTS TO PILOT INLET CONNECTION
OPTIONAL LOADING CONNECTION: 1/4 NPT NORMALLY PLUGGED
11B5004-A

TYPE 112


CONTROL LINE CONNECTION: 1/2 NPT PRESSURE REGISTRATION ONLY. USE 3/8-INCH / 9.5 mm O.D. TUBING OR LARGER FOR CONTROL LINE
CONTROL LINE CONNECTION: 3/4 NPT PRESSURE REGISTRATION AND PILOT BLEED (EXHAUST). USE 3/4-INCH / 19 mm PIPE MINIMUM FOR CONTROL LINE
INLET 3/4 NPT CONNECTS TO 1/4 NPT TYPE 112 OUTLET
INLET 3/4 NPT CONNECTS TO 1/4 NPT TYPE 112 OUTLET
PILOT BLEED (EXHAUST) CONNECTION: 3/4 NPT. USE 1/2-INCH / 13 mm PIPE MINIMUM FOR BLEED (EXHAUST) LINE
B2609

TYPE 161AY **TYPE 161AYM**


1/4 NPT NORMALLY PLUGGED
CONTROL LINE CONNECTION: 1/4 NPT PRESSURE REGISTRATION ONLY. USE 3/8-INCH / 9.5 mm O.D. TUBING OR LARGER FOR CONTROL LINE
INLET 1/4 NPT CONNECTS TO 1/4 NPT TYPE 112 OUTLET
IN
OUT
SENSE
INLET 1/4 NPT CONNECTS TO 1/4 NPT TYPE 112 OUTLET
PILOT BLEED (EXHAUST) CONNECTION: 1/4 NPT USE 3/8-INCH / 9.5 mm O.D. TUBING OR LARGER FOR BLEED (EXHAUST) LINE
CONTROL LINE CONNECTION: 1/4 NPT PRESSURE REGISTRATION AND PILOT BLEED (EXHAUST). USE 3/8-INCH / 9.5 mm O.D. TUBING LARGER FOR CONTROL LINE
21B5005-A

TYPE 161EB **TYPE 161EBM**

Figure 16. *Pilot Port Function and Connection Sizes*

Ordering Information

The precision slotted cage of the EZR Series regulator offers superior noise attenuation. For a standard installation, as well as to obtain a noise prediction for your installation and service conditions, please complete the specifications worksheet at the bottom of the ordering guide on page 36.

Carefully review each specification, then complete the Ordering Guide on pages 34 and 35. If a pilot setpoint is not requested, the regulator will be factory set at the approximate midrange.

Type EZR Ordering Guide

Type (Select One)
- ☐ EZR
- ☐ EZROSX (with slam shut)

Body Size (Select)
- ☐ NPS 1 / DN 25 (Available in steel only)***
- ☐ NPS 1-1/4 x 1 / DN 32 x 25 (Available in NPT steel only)***
- ☐ NPS 2 / DN 50***
- ☐ NPS 2 x 1 / DN 50 x 25***
- ☐ NPS 3 / DN 80***
- ☐ NPS 4 / DN 100***
- ☐ NPS 6 x 4 / DN 150 x 100***
- ☐ NPS 8 x 4 / DN 200 x 100***
- ☐ NPS 6 / DN 150***
- ☐ NPS 8 x 6 / DN 200 x 150***
- ☐ NPS 12 x 6 / DN 300 x 150***
- ☐ NPS 8 / DN 200***

Body Material and End Connection Style (Select One) (NPS 8 / DN 200 size available only in LCC steel CL150, CL300 or CL600 RF)

Cast Iron Body
- ☐ NPT (Available in NPS 2 or 2 x 1 / DN 50 or 50 x 25 only)***
- ☐ CL125 FF***
- ☐ CL250 RF***

WCC or LCC Steel Body
- ☐ NPT (Available in NPS 1, 1-1/4 x 1, 2 x 1 or 2 / DN 25, 32 x 25, 50 x 25 or 50 only)***
- ☐ CL150 RF***
- ☐ CL300 RF***
- ☐ CL600 RF***
- ☐ SWE (Available in NPS 1, 2 x 1 or 2 / DN 25, 50 x 25 or 50 only)*
- ☐ BWE 40**
- ☐ BWE 80*
- ☐ PN 16/25/40* _____ specify

Main Valve Diaphragm Material (Select One)
- ☐ 17E68 Nitrile (NBR) (low temperature) (Not available on NPS 6 or 8 / DN 150 or 200 size)***
- ☐ 17E97 Nitrile (NBR) (high-pressure/ erosion resistance)***
- ☐ 17E88 Fluorocarbon (FKM) (high aromatic hydrocarbons) (Not available on NPS 8 / DN 200 size)**

Cage, Percent of Full Capacity (Select One)
- ☐ 100 percent (**standard**)***
- ☐ 60 percent (Not available on 8 / DN 200 size)***
- ☐ 30 percent (Not available on 8 / DN 200 size)***

Main Valve O-ring Material (Select One)
- ☐ Nitrile (NBR) (**standard**)***
- ☐ Fluorocarbon (FKM)**

Main Valve Main Spring (See Table 8 for Maximum Inlet Rating) (Select One)

NPS 1, 1-1/4 or 2 x 1 / DN 25 or 50 x 25 Main Valve
- ☐ Light Blue***
- ☐ Black***
- ☐ Black with white stripe***
- ☐ Red Stripe***

NPS 2 / DN 50 Main Valve
- ☐ Yellow***
- ☐ Green***
- ☐ Red***
- ☐ Purple

NPS 3 / DN 80 Main Valve
- ☐ Yellow***
- ☐ Light Blue***
- ☐ Black***

NPS 4, 6 x 4 or 8 x 4 / DN 100, 200 x 150 or 300 x 150 Main Valve
- ☐ Yellow***
- ☐ Green***
- ☐ Red***

NPS 6, 8 x 6 or 12 x 6 / DN 150, 200 x 150 or 300 x 150 Main Valve
- ☐ Yellow***
- ☐ Green***
- ☐ Red***

NPS 8 / DN 200 Main Valve
- ☐ Yellow***
- ☐ Green***
- ☐ Red***

Travel Indicator (Select One)
- ☐ No (**standard**)***
- ☐ Yes***

Inlet Strainer (Select One)
- ☐ No (**standard**)***
- ☐ Yes***

Type EZR Ordering Guide (continued)

Inlet Body Tap (Select One)
- ☐ Inlet body tap only (**standard**)***
- ☐ Inlet body tap with pre-piped pilot supply***
- ☐ Inlet/outlet body taps only***
- ☐ Inlet/outlet body taps with pre-piped pilot supply and pilot bleed***

Pilot Diaphragm Material (Select One)
- ☐ Nitrile (NBR) (**standard**)***
- ☐ Fluorocarbon (FKM)**

Pilot O-ring Material (Select One)
- ☐ Nitrile (NBR) (**standard**)***
- ☐ Fluorocarbon (FKM)***

Pilot Valve Plug Material (Select One)
- ☐ Nitrile (NBR) (**standard**)***
- ☐ Fluorocarbon (FKM)***

Pilot Mounting (Select One)
- ☐ Standard***
- ☐ Quick Disconnect Union**

Pilot Type and Outlet Pressure Range (Select One)

Type 161AY
- ☐ 6 to 15 inches w.c. / 15 to 37 mbar, Olive Drab***
- ☐ 0.5 to 1.2 psig / 0.03 to 0.08 bar, Yellow***
- ☐ 1.2 to 2.5 psig / 0.08 to 0.17 bar, Light Green***
- ☐ 2.5 to 4.5 psig / 0.17 to 0.31 bar, Light Blue***
- ☐ 4.5 to 7 psig / 0.31 to 0.48 bar, Black***

Type 161AYM
- ☐ 6 to 15-inches w.c. / 15 to 37 mbar, Olive Drab***
- ☐ 0.5 to 1.2 psig / 0.03 to 0.08 bar, Yellow***
- ☐ 1.2 to 2.5 psig / 0.08 to 0.17 bar, Light Green***
- ☐ 2.5 to 4.5 psig / 0.17 to 0.31 bar, Light Blue***
- ☐ 4.5 to 7 psig / 0.31 to 0.48 bar, Black***

Type 161EB
- ☐ 5 to 15 psig / 0.34 to 1.0 bar, White***
- ☐ 10 to 40 psig / 0.69 to 2.8 bar, Yellow***
- ☐ 30 to 75 psig / 2.1 to 5.2 bar, Black***
- ☐ 70 to 140 psig / 4.8 to 9.7 bar, Green***
- ☐ 130 to 200 psig / 9.0 to 13.8 bar, Blue***
- ☐ 30 to 300 psig / 2.1 to 20.7 bar, Green*** (intermediate reduction pilot on the Type EZR worker/monitor systems)
- ☐ 200 to 350 psig / 13.8 to 24.1 bar, Red***

Type 161EBM
- ☐ 5 to 15 psig / 0.34 to 1.0 bar, White***
- ☐ 10 to 40 psig / 0.69 to 2.8 bar, Yellow***
- ☐ 30 to 75 psig / 2.1 to 5.2 bar, Black***
- ☐ 70 to 140 psig / 4.8 to 9.7 bar, Green***
- ☐ 130 to 200 psig / 9.0 to 13.8 bar, Blue ***
- ☐ 200 to 350 psig / 13.8 to 24.1 bar, Red***

Type PRX120/125
- ☐ 14.5 to 26 psig / 1.00 to 1.8 bar, Yellow***
- ☐ 23 to 44 psig / 1.6 to 3.0 bar, Green***
- ☐ 41 to 80 psig / 2.8 to 5.5 bar, Blue***
- ☐ 73 to 123 psig / 5.0 to 8 bar, Black***
- ☐ 116 to 210 psig / 8 to 14 bar, Silver***
- ☐ 203 to 334 psig / 14 to 23 bar, Gold***
- ☐ 319 to 435 psig / 22 to 30 bar, Aluminum***

Type PRX120/125-AP
- ☐ 435 to 1000 psig / 30 to 69 bar, Clear***

Type 252 Pilot Supply Filter (Optional)

Material
- ☐ Stainless steel***
- ☐ Aluminum**

Length
- ☐ Standard***
- ☐ Extended**

Drain Valve
- ☐ Yes***
- ☐ No**

Conversion Trim Package (Optional, Not available for NPS 8 / DN 200 size)
- ☐ Yes, send one conversion trim package. (If ordering replacement trim package for change-out of existing E-body to a Type EZR, be sure to mark selection of the following items on this page: body size, diaphragm material, inlet strainer option and travel indicator option desired.)

Main Valve Replacement Parts Kit (Optional)
- ☐ Yes, send one diaphragm cartridge and O-rings kit to match this order.
- ☐ Yes, send one diaphragm and O-rings kit to match this order.

Pilot Replacement Parts Kit (Optional)
- ☐ Yes, send one replacement kit to match this order.

Wireless Position Monitor Mounting Kit (Optional)
- ☐ Yes, send one mounting kit for mounting the Topworx 4310 or the Fisher® 4320 wireless position monitor (requires Travel Indicator option)

Regulators Quick Order Guide	
* * *	Readily Available for Shipment
* *	Allow Additional Time for Shipment
*	Special Order, Constructed from Non-Stocked Parts. Consult your local Sales Office for Availability.
Availability of the product being ordered is determined by the component with the longest shipping time for the requested construction.	

Specification Worksheet

Application (Please designate units):
Specific Use _____
Line Size _____
Gas Type and Specific Gravity _____
Gas Temperature _____
Does the Application Require Overpressure Protection?
☐ Yes ☐ No If yes, which is preferred:
☐ Relief Valve ☐ Monitor Regulator ☐ Shutoff Device
Is overpressure protection equipment selection assistance desired? _____

Pressure:
Maximum Inlet Pressure (P_{1max}) _____
Minimum Inlet Pressure (P_{1min}) _____
Downstream Pressure Setting(s) (P_2) _____
Maximum Flow (Q_{max}) _____

Performance Required:
Accuracy Requirements? _____
Need for Extremely Fast Response? _____

Other Requirements: _____
_____
_____

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